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MEDIA RELEASE

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Fellowships spearhead new climate change research in BC universities

British Columbia's leadership in the climate change arena has taken another step forward with the announcement today by the Pacific Institute for Climate Solutions (PICS) of 22 new or extended university climate change research scholarships for 2009-10.

PICS has awarded 15 new fellowships (comprising six master's and eight PhD students plus one post-doctoral fellow) and extended the existing research scholarships for seven other graduate students. All recipients are from PICS' collaborating universities – the University of Victoria, the University of British Columbia, Simon Fraser University and the University of Northern British Columbia.

PICS director Dr. Tom Pedersen says the fellowships are collectively worth more than \$250,000, which represents a major investment in ensuring BC decision-makers have up-to-date, relevant research to help guide mitigation and adaptation policy decisions.

“Climate change is one of the greatest challenges facing our province, and indeed our planet,” he says. “Without sound information to guide government, industry and our communities, we risk failure in mitigating and preparing for its worst impacts, and risk missing opportunities presented by the emerging green economy.”

Research topics tackled by the new PICS scholarships include:

- the expansion potential for environmentally friendly geothermal energy within BC
- future threats to BC's hydro-electric power, and optimal strategies for Canadian wind power generation
- reducing BC's aviation carbon footprint despite a global upswing in aircraft emissions
- the impact of climate change on the invasion of biological species and rangeland productivity
- the impact of social influences on public acceptance and adoption of new energy technologies

The seven existing PICS fellowships awarded ongoing funding include projects on pine beetle outbreaks and on “green building” design and functionality, and can be viewed at http://pics.uvic.ca/fellowship_holders.php

Pedersen says this broad range of PICS -funded research will result in solutions not just from a science and engineering perspective, but across the spectrum of human endeavour. PICS fellowships are worth up to \$12,000 a year for master's students, \$18,000 a year for PhD students, and \$50,000 a year for post-doctoral fellows, with factors such as other awards held determining the final value.

See attached backgrounder for summary of new PICS fellowships. For further information, photos, or to be put in touch with new or existing recipients please contact the PICS communications officer or each university's communication office.

PICS is a collaboration of BC's four research-intensive universities hosted and led by the University of Victoria.

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New recipients of PICS Fellowships 2009-10

University of Victoria (UVic)

Torsten Broeer, PhD candidate, Institute for Integrated Energy Systems (IESVic), Department of Mechanical Engineering, UVic

Broeer's research focuses on modeling the existing conventional electricity generating system and the impacts of an increasing contribution of wind energy to Canada's power generation system. The main objectives are to determine optimal ways to integrate economically feasible wind energy generation into the power system, while maintaining or improving system reliability and reducing greenhouse gas (GHG) emissions.

Brian Crouse, MSc candidate, School of Earth and Ocean Sciences, UVic

Crouse will be working with UVic's Earth System Climate Model (ESCM), which combines models of different aspects of the world so that their interactions can be accounted for. The model currently consists of an ocean general circulation model, a sea ice model, a dynamic energy-moisture balance atmosphere model, a land surface model, a dynamic vegetation model, and a terrestrial and oceanic carbon cycle model. Crouse's research will use data from the model to better understand the Earth's climate and improve the model in order to better predict the climate of the future.

Rod Davis, PhD candidate, School of Environmental Studies and Department of Geography, UVic

It is believed that current land management policies in British Columbia will not provide habitat conditions necessary for important wildlife species to adapt to predicted changes in climate. This study will evaluate landscape patterns and processes, wildlife-habitat relationships, and the social responses to policy changes needed to address future environmental conditions in BC's portion of the Rocky Mountain ecosystem.

Michael Fischer, PhD candidate, Institute for Integrated Energy Systems (IESVic), Department of Mechanical Engineering, UVic

The energy services provided by BC's electrical grid are critical to the physical, economic and social well-being of British Columbians. Since electricity generation is primarily hydroelectric, this reliability is in question as we lose glaciers and experience supply-demand mismatches arising from changing or erratic annual precipitation patterns. Transmission and distribution infrastructure is also vulnerable to extreme weather events, which appear to be happening with increasing frequency. This research aims to understand the predicted impacts of climate change on the existing electrical grid's generation, transmission and distribution functions, and to develop adaptation and mitigation options (for improving grid resilience to extreme weather events) with which to inform policy makers.

Christine Kormos, PhD candidate, Department of Psychology, UVic

As part of her PhD research, Kormos is examining the social influences on public acceptance and adoption of new energy technologies, specifically the plug-in hybrid electric vehicle (PHEV). Few studies have examined the psychological factors in play when consumers consider these new energy products. In an effort to identify some of these factors, Kormos will explore the impact of different types of product risk perception on consumer evaluations of the PHEV.

Anita Girvan, PhD Candidate, Interdisciplinary (Cultural, Social and Political Thought), UVic

The metaphor of the "carbon footprint" (representing the total set of GHG emissions caused directly and indirectly by an individual, organization, event or product) has emerged as an important expression of a new kind of citizenship in the climate change debate; however, how the metaphor is used for varying interests has not yet received critical attention. By examining documents (popular media, policy documents and websites), this study will unpack these competing interests.

While the carbon footprint remains a potentially useful tool for creating change, this research will question whether the metaphor is the universal measure and expression of environmental responsibility that it is assumed to be. More broadly, it will argue that reckoning with the problem of climate change and crafting possible solutions involves an understanding of the complex interactions of atmospheric, social, economic, and political systems and of the central mediating and shaping role of language and stories.

Simon Fraser University (SFU)

Rose Elise Murphy, PhD candidate, School of Resource and Environmental Management, SFU

Maintaining and expanding forested areas has important implications for fighting climate change given that trees remove the GHG carbon dioxide from the atmosphere. Carbon is sequestered in the trees themselves and in forest soils. Murphy's research will test how various policies might shift land-use choices between agriculture and forest, with implications for carbon sequestration.

Elizabeth Sutton, MRM candidate, School of Resource and Environmental Management, SFU

Climate change may alter the pattern, distribution and frequency of storm events, which could present significant natural hazards to sensitive areas in terms of infrastructure, development sites and safety. The area surrounding the city of Chilliwack has already experienced damage from landslides and debris flows, and faces issues of land-use planning and public safety. This research will determine the likelihood and expected frequency of severe storms causing slope failures near Chilliwack and provide information that can be used to mitigate effects and/or adapt current infrastructure and activities to cope with severe weather events.

Rupananda Widanage, PhD candidate, School of Resource and Environmental Management, SFU

Existing research shows that anthropogenic (or human-caused) activities—leading to climate change in particular—has caused alterations in species distribution in rangelands across North America by creating competition between invasive plants and grass species. This has reduced the forage available for cattle consumption, diminishing their weight gain and the resulting profitability of the livestock industry. This study will examine the impact of climate change on biological invasion and the resulting economic loss for ranchers. It will also explore how different policy options such as taxes, subsidies and community-based management can help mitigate these impacts. These research results will be used to inform and assist the Ministry of Forests and Range with its policy decisions.

University of British Columbia (UBC)

Waleed Giratalla, MSc candidate, School of Regional and Community Planning, UBC

“Intentional community” is an inclusive term for eco-villages, co-housing and an array of other projects where people strive toward a common vision. Studies have shown that intentional communities have less environmental impact per capita than mainstream communities; however, there have not been studies to verify whether this is true of intentional communities in Canada. This study will determine how intentional Canadian communities compare to mainstream Canadian communities with respect to ecological impact.

Sarah Kimball, MASc candidate, Norman B. Keevil Institute of Mining Engineering, UBC

Kimball's research is in the field of geothermal energy. This renewable energy is a source of power that is virtually carbon and emissions-free. British Columbia is endowed with high geothermal gradients (temperature increase with depth) mainly associated with the Pacific Ring of Fire and the Rocky Mountain trench, leading to great potential for both conventional and drilled Engineered Geothermal Systems (EGS) geothermal projects. Her research focus is EGS and how this technology may extend the geothermal potential, primarily on the west coast and also to the rest of the Canada.

Dr. Duncan Cavens, Post-doctoral fellowship, School of Architecture and Landscape Architecture, UBC

This research involves the development of a modelling methodology that will help local communities explore the relationship between their land use proposals and GHG emissions. This method, called the “development pattern” approach, is based on a database of replicable patterns, each representing a typical collection of buildings, lots, and local streets. These patterns can evaluate a planning scenario's performance in a variety of areas including building energy use and transportation. The method has been prototyped on a number of Canadian municipalities and is designed to allow local governments to quickly determine the likely implications of specific spatial changes to land-use plans and transportation infrastructure. This research aims to improve both the overall usability of the method for local governments and the modeling of transportation impacts.

Patrick Little, MSc candidate, Department of Forest Resources Management, UBC

Little's research explores the connections between climate, landscape and river systems. The physical form of a river system and its aquatic and streamside habitat are controlled by the magnitude and timing of flow events as well as inputs of sediment, logs and the influence of vegetation. By examining how these natural systems work together, this research will help scientists to predict how changes in climate (affecting storm size and frequency) will affect the physical condition of the river, and how different watersheds will respond to climate change. This information will help policy makers ensure that land use activities do not contribute to climate and landscape induced habitat degradation, and it will provide a basis for river restoration practices that will work with new climate patterns.

Catalin Ristea, PhD candidate, Department of Forest Resources Management, UBC

Ristea's research focuses on the use of renewable woody biomass for production of bioenergy, which is viewed as a significant climate change mitigation strategy. The aim of his work is to gauge the economic viability of large-scale bioenergy production systems, while assessing their effectiveness as environmentally sustainable climate mitigation activities. The anticipated results of this research will enable policy-makers to understand the cost-benefit trade-offs of these bioenergy enterprises, and evaluate ways to reduce negative environmental impacts on the land base while achieving economic efficiencies.

University of Northern British Columbia (UNBC)

Moritz Alexander (Alex) Schare, MA candidate, International Studies Program, UNBC

According to the United Nations, international aviation emissions from developed countries rose by 65.8% between 1990 and 2005. Schare's research will investigate the relationship between air traffic and climate change in British Columbia. First, the carbon footprint of air traffic in BC will be examined, along with its development in the past and its projected changes in the future. Then, the effectiveness of current efforts to reduce this carbon footprint will be studied. The third aspect of the research will investigate what other options are available for future reductions of the carbon footprint and what their costs might be.

Existing PICS fellowships awarded additional funding out of the 2009-10 funding found can be viewed at http://pics.uvic.ca/fellowship_holders.php

UVic media releases and other resources for journalists are available at communications.uvic.ca/media