Dr. Roland Hall
Associate Professor, Department of Biology, and Associate Dean of Graduate Studies, Faculty of Science, University of Waterloo

Dr. Hall heads the University of Waterloo's Environmental Change Research (WATER) Lab, a facility dedicated to addressing ecological issues through the analysis of long term environmental records. Using information contained in sediment cores and other environmental archives (e.g., tree rings, historical records, etc.) work at the centre focuses on understanding how aquatic ecosystems respond to natural and human-induced changes. Active research programs centre on the effects of climatic variations and human activities on lakes and rivers located in the Peace-Athabasca Delta (N. Alberta), Slave River Delta (NWT), Nahanni National Park (NWT), Old Crow Flats (Yukon), Northern Manitoba, Sweden, The Netherlands and Ghana (Africa). Dr. Hall is the recipient of the Ontario Premier's Research Excellence Award (PREA) 2003-2007 to support training of graduate students on Ecological Changes in the Mackenzie Basin Deltas: Assessing the roles of climate, hydrology & human activities on sensitive lakes and wetlands over the past 1,000 years.

IC³ Seminar Series 2009

Presented by the Interdisciplinary Centre on Climate Change

Climate Change and Water Resources in the Peace-Athabasca Watersheds: Anticipating the Future from Perspectives of the Past

ABSTRACT: The Peace-Athabasca Delta (PAD), a 4000 km^2 water-rich landscape of shallow lakes, wetlands and meadows, located where the meandering Peace and Athabasca rivers converge in north-eastern Alberta, is one of Canada's 15 UNESCO World Heritage Sites. An oasis for birds that migrate along North America's four major flyways and home to the world's largest free-roaming herd of bison, the PAD was protected by Canadians in 1922 with the creation of Wood Buffalo National Park. Despite national and international efforts to preserve this important freshwater ecosystem, the PAD has been the subject of intense scrutiny for the past four decades because of the perceived negative role of the WAC Bennett Dam, constructed in 1968 at the headwaters of the Peace River to generate hydro-electricity. Until recently, little was known about how the PAD eco-system has evolved or responded to climate change - two critical knowledge gaps that have long hampered effective ecosystem management and stewardship. In one of the most highly funded Canadian environmental science projects of the decade, Hall and colleagues examined changes that had occurred in the PAD over the past 1000 years from a unique array of high-resolution paleohydrological reconstructions derived from the analysis of several lake sediment cores. While these studies have failed to implicate the dam in causing any lasting detrimental changes in the hydrology and ecology of the delta, they have revealed that climatic changes that altered the amount and timing of river discharge strongly affect the delta. The trends of climate-driven hydrological changes are a far greater concern for those living in watersheds that rely on freshwater supplied by rivers that drain the eastern slopes of the Rocky Mountains. The status of these freshwater resources is at a critical juncture. Indeed, it is likely that we will soon enter a new hydrological regime of significant reductions in available fresh-water that will challenge society to respond effectively.

March 18, 2009, 12:00— 1:15 pm Room EV1—221

Please note: Seating is Limited. Refreshments will be provided.

For more information, contact Anneliese Burger: aburger@uwaterloo.ca, x 38480

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