



**Dr. Stephen Howell**

NSERC Post-Doctoral Fellow, Department of Geography and Environmental Management, University of Waterloo

Dr. Howell has been researching the sea ice of the Canadian Arctic Archipelago for almost 10 years. His research program focuses on developing sea ice geophysical inversion techniques from remotely sensed data to understand how the CAA is responding to climate change. He has participated in several major Arctic research programs including the Collaborative Interdisciplinary Cryospheric Experiment (C-ICE), Canadian Arctic Shelf Exchange Study (CASES) and ArcticNet.

## IC<sup>3</sup> Seminar Series 2009

Presented by the Interdisciplinary Centre on Climate Change

### Changing Sea Ice of the Canadian Arctic Archipelago: Implications for Navigating the Northwest Passage



**Abstract:** Since regular monitoring began in 1978 from satellite remote sensing measurements, Northern Hemispheric sea ice extent has declined annually by about -3% per decade. These changes have been the largest in September at -11.1% per decade and virtually every year since 2002, has set a new recorded low. The rapid reduction of sea ice extent in 2007 exceeded climate model projections by almost 20 years, and as a result, the transition to a summertime ice free Arctic is now expected to occur much sooner than initially predicted. While it is certain that a warming climate will continue to bring lighter sea ice conditions to the Arctic Ocean, evidence to the contrary may well be the case within the Canadian Arctic Archipelago (CAA). Within the CAA, increased warming and longer melt seasons have reduced total sea ice cover but this has also changed the source of multi-year sea ice within the CAA from in-situ first-year ice aging to dynamic import from the Arctic Ocean. Therefore, as the transition to a summer-time sea ice free Arctic continues the supply of multi-year sea ice from the Arctic Ocean to the CAA may reduce but it is unlikely to stop. This has negative implications for the practical usage of the Northwest Passage.

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

*Please note, seating is limited. Refreshments provided in courtyard.*

For more information, contact Anneliese Burger: [aburger@uwaterloo.ca](mailto:aburger@uwaterloo.ca), x 38480

UNIVERSITY OF  
**Waterloo**  
FACULTY OF ENVIRONMENT