



**Dr. Mark Serreze**

**National Snow and Ice Data Center (NSIDC), University of Colorado at Boulder**

Dr. Mark Serreze is a Senior Research Scientist at the NSIDC and a Fellow of both the Program in Atmospheric and Oceanic Sciences (PAOS) and the Cooperative Institute for Research in Environmental Sciences (CIRES). One of North America's foremost experts on climate change, Dr. Serreze is a member of the American Geophysical Union (AGU) and the American Meteorological Society (AMS). He is a scientific manuscript reviewer for several journals, a frequent media contact for issues relating to arctic and global climate change, and co-author of the award winning textbook *The Arctic Climate System*. In 2006 Dr. Serreze provided testimony to the United States Senate Committee on Commerce, Science and Transportation regarding changes in arctic sea ice cover (2004) and participated in a Congressional Briefing, "Recent Scientific Findings of Arctic Environmental Change". His current research involves evaluating causes of declining sea ice cover, studying aspects of the Arctic's large-scale heat and freshwater budgets, and examining the role Greenland and the surrounding area plays in cyclone development and poleward heat and moisture transports.

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

Presented by the Interdisciplinary Centre on Climate Change

## Cranking Up the Arctic Heat

**ABSTRACT:** The concept of Arctic amplification is that rises in surface air temperature in response to increasing atmospheric greenhouse gas concentrations will be larger in the Arctic compared to the Northern Hemisphere as a whole. Model-projected Arctic amplification is focused over the Arctic Ocean. As the climate warms, the summer melt season lengthens and intensifies, leading to less sea ice at summer's end. Summertime absorption of solar energy in expanding open water areas increases the sensible heat content of the ocean. Ice formation in autumn and winter, important for insulating the warm ocean from the cooling atmosphere is delayed. This promotes enhanced upward heat fluxes, seen as strong warming at the surface and in the lower troposphere. Based on the satellite-derived sea ice record and other data sources, Arctic amplification associated with declining ice extent has emerged in the past decade, and is growing in strength. The extreme Arctic warmth of autumn 2007 and 2008 serves as an exclamation point on this trend. Anticipated impacts of continued Arctic amplification include alterations in patterns of atmospheric circulation and precipitation both within and beyond the Arctic, and enhanced warming of Arctic and subarctic land areas that may hasten carbon cycle feedbacks associated with thawing permafrost.

**March 4, 2009 7:00 - 8:30 pm, Federation Hall - Reception to follow**

***This is a free public lecture; however an RSVP IS REQUIRED.***

***Please register at [www.ic3.uwaterloo.ca/seminars/rsvp.html](http://www.ic3.uwaterloo.ca/seminars/rsvp.html)***

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