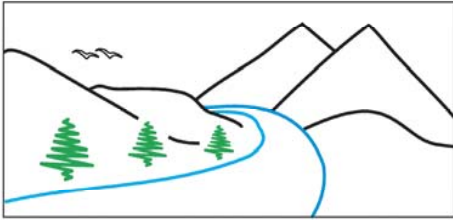


NRESi



"Our environment is our future"

RESEARCH COLLOQUIUM SERIES

Dr. Shawn Marshall

Dept. of Geography
University of Calgary



Friday
Oct. 24, 2008

3:30 - 4:30

LECTURE THEATRE

7 - 212

**LIGHT REFRESHMENTS
SERVED AT 3:20 PM**

Rising Tide: Historical & Future Sea Level Rise

Climate warming is causing glaciers and ice sheets to ebb in most regions of the world, contributing to global sea level rise. The rate of sea level rise has doubled since 1993 and there are worrisome signs that the great ice sheets in Greenland and Antarctica are now rumbling to life. The area of the Greenland ice sheet that experiences summertime melt has increased by more than 50% in the last two decades, with evidence that the meltwater is causing accelerated glacier flow and ice loss. Meanwhile, ocean warming is inducing acceleration and retreat of marine-based outlet glaciers around the world. The positive feedbacks associated with these changes could contribute to a sea level rise of as much as 1 m this century, which would be difficult and costly to remediate. Sea level rise is particularly threatening because of its impacts on low-lying developing countries. The World Bank estimates that a 1-m sea level rise would displace at least 56 million people worldwide, a crisis of environmental refugees without precedent, with increased flood risk to over 200 million people. Despite this importance, forecasts for sea-level rise are extremely uncertain. Recent changes in ice dynamics cannot yet be simulated by glaciological models, which do not capture the relevant fast-flow physics or three-way interactions with the ice sheet, ocean, and atmosphere. Current models offer insight into the stability of the polar ice sheets for a particular climate perturbation, but without all of the feedbacks and processes that are salient to predictions of how rapidly ice sheets can respond to climate forcing. I will discuss these uncertainties and provide a 'post-IPCC' view of what may be in store for global sea-level rise in the decades ahead.