UNIVERSITY OF MANITOBA

Clayton H. Riddell

Faculty of Environment, Earth, and Resources

Clayton H. Riddell Faculty of Environment, Earth, and Resources
Faculty Seminar

Dr. Søren Rysgaard

Professor and Canada Excellence Research Chair (CERC)
University of Manitoba

Monday, February 28, 2011
3:00 p.m. – 4:30 p.m.
221 Wallace Building

Sea ice biogeochemistry – an overlooked factor in the air-sea CO^2 exchange in Polar Seas?

Although salt rejection from sea ice is a key process in deep water formation in ice-covered seas, the concurrent rejection of CO^2 and the subsequent effect on air-sea CO^2 exchange have received less attention. Dr. Rysgaard will review the mechanisms by which sea ice directly and indirectly controls the air-sea CO^2 exchange and apply recent measurements of sea ice carbon compounds to estimate that uptake during the seasonal cycle of sea-ice growth and decay is equivalent to nearly half of the net CO^2 exchange in ice-free polar seas. This impact from sea-ice driven CO^2 uptake is not considered in estimates of the future global oceanic CO^2 uptake. The sea ice-driven net CO^2 uptake is due to rejection of CO^2-rich brine and its sinking to deeper waters, blocking of air-sea CO^2 exchange during winter, release of CO^2-depleted melt water with excess alkalinity during sea ice decay, and biological CO^2 drawdown during photosynthesis.

Pizza lunch with graduate students
February 28, 2011
12:00 – 1:30 p.m.
3rd Floor Wallace Building