Dr. Chris Fletcher (SHARCNET)

Chris Fletcher did his schooling in the UK: Ph.D. in 2005 from University College London, where he worked on developing statistical models of seasonal predictability of the North Atlantic Oscillation; Postdoctoral Fellow at University of Toronto, 2005-2010 where he worked with Paul Kushner on atmospheric dynamics and climate modelling. He is specialising in surface-atmosphere interaction and teleconnections. He is currently Assistant Professor and SHARCNET Research Chair in GEM, Faculty of Environment, University of Waterloo.

Atmospheric circulation patterns in climate change

Wednesday, September 22nd, 2010 | EV1 - 221 | Start at: 12:00 p.m.

University of Waterloo, 200 University Ave. West, Waterloo, ON
Lunch will be provided.

Website: http://www.ic3.uwaterloo.ca

Predictions of regional climate change are primarily related to changes in local circulation patterns, and are highly uncertain. In this talk I will review recent work from two projects investigating how regional changes to temperatures at the Earth's lower boundary can affect atmospheric circulation patterns, on timescales ranging from days to centuries.

The first examines feed backs between the cryosphere and surface temperature, hydrology and overlying atmospheric circulation. These feedbacks are seen clearly in model simulations of the future climate, but they are also found on daily to seasonal timescales in the present climate. I will show results quantifying these snow albedo feedback processes using observations and output from a hierarchy of climate models.

The second project examines how temperature changes at the ocean surface interact with the atmospheric circulation, and how this might alter under climate change. Of particular interest is understanding how ocean anomalies associated with the El Nino/Southern Oscillation can affect temperature and precipitation patterns over North America and Europe during winter. We investigate the underlying dynamics of these teleconnection patterns using a series of GCM experiments. Collectively, these projects provide insight into potential future regional climate change and could help to reduce our uncertainty in such predictions.