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Joint PCIC/CCCma Topics on Atmospheres and Oceans Seminar

Title: Evaluation and application of dynamical and statistical downscaling tools for reconstruction of the variability and extremes of current climate regime and future scenario projections

Presenter: Dimitri Parishkura, University of Quebec at Montreal and Adaptation and Impacts Research Division, Environment Canada.

Location: University of Victoria, ISC 370 <http://www.uvic.ca/buildings/isc.html>

Date: 23 January 2008 **Time:** 10:00-11:00 am

Abstract:

Global climate models (GCMs) with their coarse resolution have limited capacity to simulate wet and dry spells as well as the extreme events of precipitation in areas where mesoscale convective processes dominate. They also show some discrepancies in simulating temperature intra-seasonal variability in complex topography regions. In order to construct reliable climate change scenarios, downscaling based on dynamical and statistical methods are needed to improve the confidence in the temperature/precipitation signals. In that perspective, the main objective of this study was to evaluate two statistical downscaling tools as well as several versions of the Canadian regional climate model (RCM) runs on their capability to reconstruct the occurrence and intensity of precipitation events as well as statistical distribution of temperature (PDFs). The areas of interest include Ontario, Quebec, Northern Canada and Western Africa monsoon. A new set of key atmospheric predictors developed from NCEP reanalysis data has allowed Statistical Downscaling to simulate the occurrence of wet and dry spell series relatively well compared to the observed ones. Downscaling results driven by three series of GCMs (CGCM2/CGCM3 and HadCM3) predictors, suggest some added values compared to GCMs raw outputs for both the occurrence and duration of precipitation events including dry spells. Downscaling based future scenarios also show a more realistic simulation as compared to GCM outputs of extreme indicators.