Theme 3 Overview

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Theme 3

- Assess and reduce uncertainties in the prediction of drought and its structure
- Progress in 2007
  - Precipitation and other atmospheric parameters
  - Soil moisture and runoff generation
  - Groundwater

Precipitation and other atmospheric parameters

- Hanesiak
  - CRCM/CLASS, CRCM/force-restore: precipitation, temperature and snow cover
- Stewart
  - Operational seasonal prediction: summer precipitation and storm events
- Pietroniro
  - South Saskatchewan River Basin: evaluated different precipitation products; sensitivity of hydrograph simulated by WATFLOOD to precipitation
- Szeto
  - Different RCMs: simulation of 1999-2004 drought
- Strong
  - Moisture gradients across different land covers
- Lin
  - HFP2 seasonal forecast (AGCM3/CLASS): 500 mb height, SAT and precipitation

Soil moisture and runoff generation

- Pomeroy
  - CRHM: effects of blowing snow and snowmelt on spring runoff, drought evaporation, contributing areas and drainage connectivity
- Pietroniro
  - MEC/MESH: South Saskatchewan River Basin, soil moisutre, runoff, groundwater, evapotranspiration and snow processes
- Lin
  - VIC and CLASS: stand-alone mode over China, Liard Basin and Prairies, 1950-2005 soil moisture anomaly percentage index

Groundwater

- Hayashi
  - VSMB: groundwater recharge model, improvements in evaporation and snowmelt
- Woodbury
  - CLASS: coupling of flows in saturated and unsaturated zones, tested over Assiniboine Delta, toolbox of numerical simulators
- Snelgrove
  - Collaborating with Woodbury and US colleagues: coupled land surface and groundwater scheme (ParFlow)

Outlook for 2008

- Focus on 199-2005 drought for seasonal forecast evaluation
  - Forecast skill for different parameters
  - Improvements: soil moisture and snowpack initialization, runoff and groundwater treatment
- Modelling
  - Consolidation of different modelling methodologies
  - MEC/MESH/CLASS as integrator?
  - Role of non-contributing areas

Questions

- What are the most important hydrological processes for the Prairies, and at what scales?
- What are the most uncertain issues in prediction at daily, weekly and seasonal time scales over the Prairies?