

## Modeling the impact of vegetation dynamics on hydrological processes in the Canadian Boreal Forest

Omer Yetemen (1), Andrew Ireson (1), Alan Barr (2), Joe Melton (2), and Andy Black (3)

(1) Global Institute for Water Security, University of Saskatchewan, Saskatoon, Canada, (2) Environment Canada, (3) Faculty of Land and Food Systems, University of British Columbia

Land surface models represent how vegetation control the water and energy balance, with the critical process being transpiration. In doing so, these models make significant simplifying assumptions about the vegetation, not least dividing large numbers of diverse plant species into a small number of functional classes. In this research, we compare a conventional land-surface scheme (CLASS) with a dynamic vegetation land surface scheme (CLASS-CTEM), both of which are applied to field sites in the boreal plains ecozone in the southern boreal forest of western Canada. Field sites established ~20 years ago, and continuously monitored since, have relatively uniform vegetation cover, making them ideal to test these models. We explore which vegetation characteristics dominate the hydrological response, with a particular focus on characteristics that may vary significantly within a single plant functional type (i.e. needleleaf trees). We also explore the impact of hydrological variability within the forest and grasslands to the south on the productivity of different plant functional types.