**Evaluating a dynamic-mesh hydrology model driven by the Global Environmental Multiscale Model (GEM) over the Canadian Rockies**

Nic Wayand, Chris Marsh, John Pomeroy

Mesoscale climate models are approaching resolutions required to resolve important weather processes that are critical for modeling mountain hydrology. This study evaluates surface outputs from the GEM model run in a forecast mode at a 2.5 km resolution over the Canadian Rockies Hydrological Observatory (CRHO) station network and assesses each variable's suitability for driving hydrological simulations. GEM 2.5 km outputs were downscaled to a variable-area triangular mesh to quantify the reduction in forecast error with higher resolution meshes. Preliminary results showed that hourly air temperature, long-wave and short-wave radiation are highly ($r^2$>0.92) correlated with CRHO station observations, but have significant annual biases of -5.9 °C, -49 W $m^{-2}$, and -39 W $m^{-2}$, respectively. The presentation will cover these results and examine the impact of the hydrological model's mesh area on the downscaling of meteorological variables and on predicted snow and soil variables compared to the CRHO network observations.