



Internal variability of the Canadian RCM's hydrologic variables at the basin scale

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Results from an ensemble of 30-year simulations performed with the Canadian Regional Climate Model (CRCM) are used to investigate the model's internal variability. We focus our analysis on the components of the model's hydrologic budget (runoff, precipitation, evapotranspiration) over 21 basins located on the Quebec/Labrador peninsula. Catchment basins cover areas ranging from 13 000 to 177 000 km², giving a combined drainage area of 1 000 000 km². Internal variability is examined through pairs of 'twin' simulations that differ only in their initial conditions. Members of the ensemble differ in several aspects: the driving data (reanalyses or CGCM output) and domain size (large regional domain covering most of North America with 200x192 grid points and a smaller domain centered over Quebec with 111x87 grid points). All simulations are run with a 45-km horizontal grid-size mesh. This analysis is necessary to acquire knowledge of the model's intrinsic internal noise and will serve as a guide to the interpretation of sensitivity experiment results, including climate change projections. Hence, from an ensemble of climate projections we will be able to compute more robust statistics and estimate part of the uncertainty associated with these projections. Evaluation of uncertainty represents fundamental information to stakeholders; it will help them estimate the level of confidence associated with the projections, thereby allowing a better evaluation of the probable impacts.