



Hydrology of Northern Quebec simulated by the Canadian Regional Climate Model in various configurations

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Results from five 38-year simulations performed with the Canadian Regional Climate Model (CRCM) are used to analyze simulated hydrologic regimes 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. The CRCM was run using different configurations: (a) it was driven either by NCEP/NCAR or by ECMWF ERA40 6-hourly global atmospheric reanalyses, (b) it was run either on a large domain covering most of North America or on a smaller domain centered over Quebec and (c) it used either the multi-layer Canadian LAnd Surface Scheme (CLASS) or a simple one-layer scheme. All simulations were run with a 45-km horizontal gridsize mesh, 29-vertical levels and 15-minute time steps. Sea surface was prescribed using AMIP-II monthly observations of sea surface temperature and sea-ice coverage. Over the study basins, we compare annual series obtained from the CRCM simulations with observed runoff and precipitation. The influence: (1) of domain characteristics, (2) of the surface scheme, and (3) of driving data on surface hydrologic budget components are investigated.