



Towards flood assessment in current and future climate using RCM for northern-eastern Eurasia

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The evidence of modeling projections of climate change impacts on floodings is important for water resources and flood assessment by decision-makers. Impact models usually utilize climate projections provided by global and regional climate models (GCMs/RCMs). However, challenges in representing dangerous hydrological events over the river catchments suggest that decisions must be made depending on the degree of realism of runoff simulation by an RCM at daily (hourly) resolution. Given an RCM simulated surface and groundwater inflow to rivers, the river routing model can compute flow and volume of water everywhere across watersheds taking into consideration thousands of reaches. In this study the new river routing model has been developed and applied to 20 years (1981-2000) MGO RCM historical climate simulation for northern Eurasia driven by the three different reanalyses (ERA-40, NCEP-DOE and JRA). The reanalyses differ to some degree in their representation of observed moisture fluxes and regional water budget suggesting that more credible response of RCM simulated regional climate can be obtained using ensembles of historical runs. The quality of model simulated annual runoff and its interannual variations is evaluated through comparison of RCM-driven river routing model output against river discharge observations across large watersheds of northern Eurasia.