Hydrological response to climate change in a high altitude catchment

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Abstract: Different climate models are linked to the coupled river and hydrological model MIKE SHE-MIKE-11 to evaluate the future impact of climate change on hydrology in the Lidder sub basin of the Jhelum Basin. The coupled hydrological model was calibrated against the observed stream flow data at Sheeshnag gauging station. The output of the model in the form of snow cover percentage was validated with the high resolution satellite-based Modis data. The outputs from five different global climate models for IPCC A1B emission scenario for future (2025, 2050, 2075 and 2100) emission scenarios were applied on a hydrological model. It was observed that at the end of 21st century the ET losses in the region is increasing, snow storage component is decreasing which is further causing the runoff in the river to increase at the end of 21st century. The contribution of base flow to the discharge in the Lidder River is increasing under all climate models except for incm3 model.

Keywords: global climate models; hydrological models; downscaling; MIKE SHE; MIKE-11.

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