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Assessment the Impact of Climate change on the hydrological regime using hydrological model in Jhelum catchment, Kashmir Himalaya

Avtar Singh Jasrotia (1,2), Deepika Baru (2), and Ajay kumar (2)

(1) Department of Geology, University of Jammu, India (asjasrotia@yahoo.co.uk), (2) Department of Remote Sensing and GIS, University of Jammu, India

ABSTRACT

The Impact of climate change on the hydrological regime of Jhelum catchment has been carried by hydrological variable infiltration capacity (VIC) model operating at a daily time step. Accordingly the future climate trends have been generated up to 2100 using Regional datasets and observed data for all the five stations namely Khanabal, Safapora, Pahalgam, Ram Munshi bagh, Sangam up to the year 2015. The regional climate data has been downloaded from Cordex site at the regional scale of 0.5 x 0.5degrees. The regional datasets were downloaded in the grid form and then the values are extracted from the grid data using Arc GIS software. In all the five stations increase in the variable of maximum temperature, minimum temperature and decadal variation in the variable of precipitation has been observed. The major indicators of hydrological change such as base flow, surface runoff and snow water equivalent shows decreasing trend in near future due to increase in maximum & minimum temperature and shifting trends of precipitation towards the ends of rainy days. The runoff shows decreasing trends from 2015 to 2100 for all the five stations in which Ram Munshi bagh shows the values of 1.11, 1.05, 1.007 for 2015, 2050 and 2100 respectively. Similarly, the Stations namely Safapora, Sangam, Pahalgam and Khanabal also show decreasing trends also in near future such as 1.15, 1.05 and 1.01 for Safapora, 1.12, 1.05 and 1.004 for Sangam, 1.14, 1.06 and 1.021 for Pahalgam and 1.91, 1.096 and 1.04 for Khanabal respectively.

Key words: Climate change, Hydrological regime, Variable infiltration capacity (VIC) model,Coordinated Regional Climate Downscaling (CORDEX) Model, Jhelum catchment.