

Impacts of Climate Change on Water Resources of Greater Zab and Lesser Zab Basins, Iraq, Using Soil and Water Assessment Tool Model

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Abstract : The Greater Zab and Lesser Zab are the major tributaries of Tigris River contributing the largest flow volumes into the river. The impacts of climate change on water resources in these basins have not been well addressed. To gain a better understanding of the effects of climate change on water resources of the study area in near future (2049-2069) as well as in distant future (2080-2099), Soil and Water Assessment Tool (SWAT) was applied. The model was first calibrated for the period from 1979 to 2004 to test its suitability in describing the hydrological processes in the basins. The SWAT model showed a good performance in simulating streamflow. The calibrated model was then used to evaluate the impacts of climate change on water resources. Six general circulation models (GCMs) from phase five of the Coupled Model Intercomparison Project (CMIP5) under three Representative Concentration Pathways (RCPs) RCP 2.6, RCP 4.5, and RCP 8.5 for periods of 2049-2069 and 2080-2099 were used to project the climate change impacts on these basins. The results demonstrated a significant decline in water resources availability in the future.

Keywords : Tigris River, climate change, water resources, SWAT

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