GCMs Derived Projection of Precipitation and Analysis of Spatio-Temporal Variation over N-W Himalayan Region

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ABSTRACT

The ensembles of two Global Climate Models (GCMs) namely, third generation Canadian Coupled Global Climate Model (CGCM3) and Hadley Center Coupled Model, version 3 (HadCM3) are used to project future precipitation in a part of North-Western (N-W) Himalayan region, India. Statistical downscaling method is used to downscale and generate future scenarios of precipitation at station scale from large scale climate variables obtained from GCMs. The observed historical precipitation data has been collected for three metrological stations, namely, Rampur, Sunni and Kasol falling in the basin for further analysis. The future trends and patterns in precipitation under scenarios A2 and A1B for CGCM3 model, and A2 and B2 for HadCM3 model are analyzed for these stations under three different time periods: 2020's, 2050's and 2080's. An overall rise in mean annual precipitation under scenarios A2 and A1B for CGCM3 model have been noticed for future periods: 2020's, 2050's and 2080's. Decrease, in precipitation has been found under A2 and B2 scenarios of HadCM3 model for 2050's and slight increase for 2080's periods. Based on the analysis of results, CGCM3 model has been found better for simulation of precipitation in comparison to HadCM3 model.

Keywords: *CGCM3, HadCM3, Statistical downscaling method, Precipitation*