_____

Evaluation and prediction of climate change conditions using the Mann-Kendall test and LarsWG model in Gorganrood Basin, Iran

Mehrnoosh Tahrizadeh[1], Gábor Mezősi[1]
[1]University of Szeged, Hungary
*Armanniknaam@gmail.com

_____

For studies on the impacts of climate change, it is crucial to understand how well stochastic weather generators can simulate daily climate scenarios. In order to achieve the goals of this research, one of the outputs of the Atmosphere-Ocean General Circulation Models (AOGCM) has been used. The LARS-WG software is one of the most famous models for stochastic weather generator data. In this study, first, the trend of precipitation, maximum & minimum temperature, and runoff for the base period was investigated using the non-parametric Mann-Kendall test. Then, the Lars WG and HadCM3 models under the SRA1B scenarios related to IPCC were used for simulating the study area. Ten stations in the Iranian Gorganrood basin were part of the experiment, which used the years 2007–2011 as the baseline climate period and the years 2011–2044 as the changing climate period. The most significant temperature increase changes are in June, August, and February, which shows that it will be hotter in the coming periods. Still, April and May will have a decrease in temperature. In all the stations except Minodasht, Aliabad, and Bandargaz, we will witness an increase in the monthly temperature during the study period. At the same time, the rainfall changes in Inchebroon and Marave Tapeh stations will decrease, and in other stations, we will see an increase in rainfall compared to the base period. The highest increase in monthly rainfall simulated by the HadCM3 model is 100 mm for the SRA1B scenario in November, which is more than three times the base rainfall in the study area. The percentage of monthly changes in runoff under RCP4.5, RCP2.6, and RCP8.5 scenarios show the runoff increase in half of the months of the year for the future. Most are related to March, with an increase of 54%.