

Climate Change Assessment of Hablehroud Watershed Using Downscaling of CanESM2 General Circulation Model Data

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Abstract

Greenhouse gases and the occurrence of climate change have occurred with the development of technology and the industrialization of human societies. long-term forecasting of climate parameters has always been interesting due to the importance of climate change for the earth and its inhabitants. General Circulation Models (GCMs) are one of the most widely used methods for evaluating future climate conditions. In the present study, the results of three general circulation models including the American model of GFDL-CM3, the Canadian model of CanESM2, and the Russian model of Inmcm4ncml for the study area were evaluated and the CanESM2 model was selected as the superior model. The RCP scenarios 2.6, 4.5, and RCP 8.5 were used with the CanESM2 model to assess climate change conditions across the Hablehroud River basin for the period 2020-2051. According to the results, the total monthly precipitation shows an increasing trend in the coming decades 2020-2051 period compared to the period 1986-2017. The results of the study of temperature changes in the period 2020-2051 in the Hablehroud River basin also indicate an increase in the monthly average of maximum and minimum temperatures in the coming decades. The consequences of these conditions are of great hydrological importance in the study area, this condition necessitates the adoption of climate change adaptation policies in this watershed.

Keywords: Climate change, Precipitation, Temperature, Downscaling, RCP, CanESM, SDSM

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