

عنوان مقاله:

Difficulties of Applying Climate Model Projections for Drought Management in Iran

محل انتشار:

اولین کنفرانس بین المللی و سومین کنفرانس ملی سد و نیروگاههای برق آبی (سال: 1390)

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خلاصه مقاله:

To provide necessary information of future water resources availability for drought management in Iran, this study assesses future change of low precipitation patterns with the sense of occurrence probability and the observation windows in unfixed seasons under SRES A1B scenario. We use precipitation data sets for the end of the 20th and the 21st century, derived by the super-high-resolution Atmospheric General Circulation Model of Japan Meteorological Agency and Meteorological Research Institute (MRI-AGCM3.1S) with a horizontal resolution of about 20 km. The lowprecipitation patterns are assessed by 0.1 probability low precipitation quantile approximated by Weibull distribution using annual minima of monthly accumulated precipitation over 3-, 6-month time intervals and also low precipitation occurrence season as a centroid of the distribution of months when the annual minima occur. This study also assesses future change of drought river discharge, estimated by 0.1 probability quantile from daily river discharge derived by the BTOPMC model applied to the MRI-AGCM3.1S precipitation data. From the precipitation analyses, the MRI-AGCM3.1S projections indicate that 0.1 low precipitation quantiles in 3- month would decrease in western mountainous areas and the quantiles in 6-month would also decrease in southern areas. Moreover, significant shift of the low precipitation occurrence season in 3- and 6-month time intervals are projected. However, projections of multi-model ensemble mean of the low precipitation patterns calculated over 16 GCMs show a considerable degree of uncertainty with low model consistency in Iran. We should carefully treat the high resolution results by MRIAGCM3.1S as one of possibilities for future water resource availability with uncertainty. From the drought river discharge analyses, the results indicate that the 0.1 probability drought river discharge would increase in northwestern mountainous areas and middle desert areas. However, applying hydrological model to simulate river .discharge in arid areas still has big challenges

کلمات کلیدی:

MRI-AGCM3.1S, Climate Change, low precipitation pattern, drought river discharge, BTOPMC

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