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Projection of drought characteristics according to future climate and hydrological changes in the Korean Peninsula

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Drought is one of the serious natural disasters along with the flood in the world. The characteristics of drought are widespread and gradually developed when compared to flood event. In South Korea, drought has been known the 2-3 or 5-7 year cycle for the occurrence. However, South Korea has suffered the drought damage almost every year since 2008 due to the impacts of climate change and some others. It is therefore very urgent to find out the reasons for this phenomenon. On the other hand, Korean peninsula has a unique situation that the South and North Korea are divided with Demilitarized Zone (DMZ) and the precipitation trends on these two regions are opposite when analyzed from globally available observation data. The precipitation in South Korea had increasing trend, while decreasing trend in North Korea. It will be useful to figure out the projection of future precipitation change, especially focusing on drought change for better establishment of climate change adaptation. The objectives of this study are to project and analyze the meteorological, agricultural and hydrological drought conditions in the Korean peninsula including South and North Korea. The 3 Regional Climate Models (RCMs) for the future projection of climate change and a global hydrological model for the projections of soil moisture and runoff are used in this study. The changes in Standardized Precipitation Index (SPI), Standardized Soil moisture Index (SSI) and Standardized Runoff Index (SRI), classified as meteorological, agricultural and hydrological droughts, were estimated from simulation results of precipitation, soil moisture and runoff for both South and North Korea. Mann-Kendal test was used to analyze the change of drought trends for future period. Seasonal drought characteristics for future period were also evaluated in this study.

Biography

Jae-Min So has completed his M.S degree at the age of 27 years from Sejong University, Seoul, Korea. He is a doctoral candidate student in Department of Civil and Environmental Engineering, Sejong University. He has published 2 papers in academic journal in South Korea.

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