Geophysical Research Abstracts
Vol. 21, EGU2019-3985, 2019
EGU General Assembly 2019

Daily rainfall simulation considering distribution of rainfall events in each duration

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When simulating the daily rainfall amount by existing Markov Chain model, it is general to simulate the rainfall occurrence and to estimate the rainfall amount randomly from the distribution which is similar to the daily rainfall distribution characteristic using Monte Carlo simulation. At this time, there is a limitation that the characteristics of rainfall intensity and distribution by time according to the rainfall duration are not reflected in the results. In this study, 1-day, 2-day, 3-day, 4-day rainfall event are classified, and the rainfall amount is estimated by rainfall duration. In other words, the distributions of the total amount of rainfall event by the duration are set using the Kernel Density Estimation(KDE), the daily rainfall in each day are estimated from the distribution of each duration. Total rainfall amount determined for each event are divided into each daily rainfall considering the type of daily distribution of the rainfall event which has the most similar rainfall amount of the observed rainfall using the k-Nearest Neighbor algorithm(KNN). This study is to develop the limitation of the existing rainfall estimation method, and it is expected that this results can use for the future rainfall estimation and as the primary data in water resource design.