



Spatio-Temporal Variability Analysis of Extreme Rainfall Through Circular Statistics

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Assessing seasonality of precipitation is necessarily required to establish future plans and policies for water resources management. Especially it is major issue over the country that seasonality of precipitation is highly concentrated. In this regard, a main objective of this study is to introduce an effective approach for assessing the seasonality of the precipitation and evaluate the seasonality through the proposed method. We have used circular statistics to characterize the seasonality on the daily precipitation in Korea, and the circular statistics allow us to effectively assess changes in timing of the seasonality in detail. It was found that peak time on monthly rainfall occurred between end of June and early July in southern coastal area while the timing was delayed in northern part of Korea because of monsoon moving in from south to north. In case of annual daily peak precipitation, spatio-temporal variation of the peak time was increased. It is mainly because of geophysical effects, frequency and paths of typhoons. Temporal variations on the timing of the peak seasons were evaluated through circular statistics by averaging 30-year data. The peak season in the Northern part of Korea(e.g. Seoul and Gangrung) has been moved back from early July to end of July while the peak season has been moved up from middle of July to early July in the Southern part of Korea(e.g. Busan and Mokpo).