Assessment of homogeneity of regions for regional flood frequency analysis

Jeong Eun Lee (1) and Nam Won Kim (2)

(1) Korea Institute of Civil engineering and building Technology, Goyang, Republic Of Korea (corresponding author, jeus22@kict.re.kr), (2) Korea Institute of Civil engineering and building Technology, Goyang, Republic Of Korea (nwkim@kict.re.kr)

This paper analyzed the effect of rainfall on hydrological similarity, which is an important step for regional flood frequency analysis (RFFA). For the RFFA, storage function method (SFM) using spatial extension technique was applied for the 22 sub-catchments that are partitioned from Chungju dam watershed in Republic of Korea. We used the SFM to generate the annual maximum floods for 22 sub-catchments using annual maximum storm events (1986~2010) as input data. Then the quantiles of rainfall and flood were estimated using the annual maximum series for the 22 sub-catchments. Finally, spatial variations in terms of two quantiles were analyzed. As a result, there were significant correlation between spatial variations of the two quantiles. This result demonstrates that spatial variation of rainfall is an important factor to explain the homogeneity of regions when applying RFFA.