

Spatial Interpolation of Rainfall by Areal Reduction Factor (ARF) Analysis for Hancheon Watershed

Kanak Kanti Kar*, Sung Kee Yang**, Junho Lee***

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Abstract

The storm water management and drainage relation are the key variable that plays a vital role on hydrological design and risk analysis. These require knowledge about spatial variability over a specified area. Generally, design rainfall values are expressed from the fixed point rainfall, which is depth at a specific location. Concurrently, determine the areal rainfall amount is also very important. Therefore, a spatial rainfall interpolation (point rainfall converting to areal rainfall) can be solved by areal reduction factor (ARF) estimation. In mainland of South Korea, for dam design and its operation, public safety, other surface water projects concerned about ARF for extreme hydrological events. In spite of the long term average rainfall (2,061 mm) and increasing extreme rainfall events, ARF estimation is also essential for Jeju Island's water control structures. To meet up this purpose, five fixed rainfall stations of automatic weather stations (AWS) near the "Hancheon Stream Watershed" area has been considered and more than 50 years of high quality rainfall data have been analyzed for estimating design rainfall. The relationship approach for the 24 hour design storm is assessed based on ARF. Furthermore, this presentation will provide an outline of ARF standards that can be used to assist the decision makers and water resources engineers for other streams of Jeju Island.

Keywords : Spatial Interpolation, Areal Reduction Factor (ARF), Hancheon Watershed, Design Rainfall

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* Master Course Student, Dept. of Civil Engineering, Jeju National University • E-mail : kanak.sust.cee@gmail.com

** Professor, Dept. of Civil Engineering, Jeju National University • E-mail : skyang@jejunu.ac.kr

*** PhD Course Student, Dept. of Civil Engineering, Jeju National University • E-mail : junho5040@naver.com