



A Study on Modified Parameter Estimation Method for Multivariate Frequency Analysis of Skewed Hydro-meteorological Data

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Multivariate frequency analysis has been developed for analyzing hydro-meteorological data such as rainfall, flood, and drought. Particularly, the copula model has been used as a useful tool for multivariate frequency analysis because the copula model has no limitation on deciding marginal distributions. Generally, the inference function for margin (IFM) and the maximum pseudo-likelihood (MPL) are the most common methods to estimate the copula parameter. However, the MPL method includes the non-parametric procedure which cannot consider the skewness of the data and suppress characteristics of the variables. In this study, the modified MPL method is presented by substituting the non-parametric procedure and assessed their performances with the Monte-Carlo simulation. In simulation procedure, the GEV distribution is selected as a population of marginal distribution with positive-skewed parameter set. Then, the estimated parameters from the IFM, MPL and modified MPL methods are compared to true value.