

Employment of Historical Literature Information on Flood Frequency Analysis using Bayesian MCMC method

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Abstract. Flood frequent analysis (FFA) plays an important role to estimate the design floods with predetermined exceedance probability. The analysis, however, has a critical limitation in implementing the frequency analysis of flood data due to the short period of modern systematic observation. In order to overcome such a limitation regarding on insufficient information, regional and historical information has been employed in literature. Particularly, Reis and Stedinger (2005) suggested that the Bayesian Markov Chain Monte Carlo (MCMC) method can be used with historical data to obtain enough data. Meanwhile, Kim (1999) quantifies the number of flood events during 1600-1900 with analyzing the historical documents of ‘Annals of the Choson dynasty’, which was written in Choson dynasty, the last dynasty of Korean history. In this paper, about 500 year historical event occurrence information is employed to perform flood frequency analysis incorporating the modern systematic data. The efficiency and improvements with historical information in the FFA is determined through various statistical tests.

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