



Analysis of effect of temporal resolution in projected future rainfall data on estimating future rainfall intensity – duration – frequency curves

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The problem of reflecting the intensity and frequency of heavy rainfall due to climate change has become a very important issue for hydrological experts and many studies have been conducted from the theoretical and practical point of view. Most of these studies can be summarized as estimating future IDF curves using various methods based on future extreme rainfall data produced by global climate models (GCMs) or regional climate models (RCMs). Since most future rainfall data provided by GCM or RCM have been generally published on a daily basis due to the reliability problem of the produced data, a temporal down-scale process from projected future daily rainfall data is required to estimate IDF curves for sub-daily durations. Since the reliability of the future rainfall data produced by RCMs has increased recently, it has become possible to acquire 3-hour rainfall data, and it is expected that future IDF curves for sub-daily durations will be more reliably estimated. However, studies on the effect of RCM temporal resolution on future IDF curves estimation have not been performed sufficiently. This is presumably due to the fact that the bias-correction problem and the temporal down-scale technique from future rainfall data given in GCMs or RCMs have been the main flow of future IDF curve estimation studies. In this study, future IDF curves derived from future daily rainfall data which is generally given by RCM and future IDF curves which are derived from future rainfall data of 3-hour temporal resolution are compared. From this comparison, the effect of temporal resolution of rainfall data provided by RCMs on future IDF curves estimation will be analyzed. It is expected that the reliability of future IDF curve estimation results for sub-daily durations using various down-scale techniques from future daily rainfall data can be indirectly examined.

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