

A new methodology to assess the impacts of precipitation change on flood risk in Tokyo 23 ward Area

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In this study, we attempted to develop a new methodology for flood risk assessment in the Tokyo metropolitan area by considering the effect of precipitation change. By comparing the statistical distribution of the daily precipitation frequency for the whole study period, and those for flood occurrence days, we found that the distributions of the precipitation frequency for the flood occurrence days are corresponding to those for the whole study period. These results indicate that we can estimate flood damage based on frequency of daily precipitation. Based on these results, we estimated the flood damage for Tokyo based on distribution of daily precipitation frequency. We then created a flood-risk curve that represents the relationship between damage and exceeding probability of a flood. By comparing the newly developed flood-risk curve, based on the precipitation frequency, with those in the previous studies, we indicated that a newly developed flood-risk curve could evaluate the potential flood risk in Tokyo with high accuracy.

Keywords: Flood risk, Precipitation change, Risk curve, Tokyo metropolitan area

