

# Integrating extreme weather systems induced from typhoons and monsoon in nonstationary frequency analysis

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## Abstract

In South Korea, annual maximum precipitation often occurs in association with mature typhoons in the western Pacific and from summer monsoon rains. In addition, certain years have no significant typhoon activity. Therefore, the characteristics of frequency distributions differ between extreme typhoons and monsoon events. Those extremes are also influenced from climate conditions in a different way. Application of nonstationary frequency analysis to the AMP data combined with typhoon and monsoon events might not always be reasonable. Therefore, we propose a novel approach of nonstationary frequency analysis to integrate extreme events of AMP induced from two main sources such as typhoons and monsoon in the current study. In this way, we were able to model the nonstationarity of extreme events from tropical storms and monsoon separately.

**Keywords:** Nonstationary frequency analysis, Typhoon, Monsoon, Extreme rainfall

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