

최근 태풍 호우에서 보이는 인류세 지문의 변화: 임계점을 넘어서  
 Anthropogenic Fingerprint on Recent Changes in Typhoon Heavy  
 Rainfall beyond Tipping-Point

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요 지

The impact of climate change on typhoons is a major concern in East Asia, especially due to the destructive effects of heavy rainfall on society and the economy, as many megacities are located along coastal regions. Although observations suggest significant changes in typhoon heavy rainfall, the extent to which anthropogenic forcing contributes to these changes has yet to be determined.

In this study, we demonstrate that anthropogenic global warming has a substantial impact on the observed changes in typhoon heavy rainfall in the western North Pacific region. Observation data indicates that, in general, typhoon heavy rainfall has increased (decreased) in coastal East Asia (tropical western North Pacific) during the latter half of the 20th century and beyond. This spatial distribution is similar to the "anthropogenic fingerprint" observed from a set of large ensemble climate simulations, which represents the difference between Earth systems with and without human-induced greenhouse gas emissions. This provides evidence to support the claim that the significant increase in the frequency of typhoon heavy rainfall along coastal East Asia cannot be solely explained by natural variability.

In addition, our results indicate that the signal of the "anthropogenic fingerprint" has been increasing rapidly since the mid-1970s and departed from natural variability in the early 2000s, indicating that the regional summer climate has already crossed the tipping point.

**핵심용어** : 기후변화, 태풍, 호우, 지문분석, 임계점

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