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The impact of extreme precipitation on forest watershed vulnerabilities

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Under the impact of global climate change, extreme weather events have been occurring in various locations and had become more intense and frequent. In 2009, Taiwan suffered from the Morakot Typhoon which caused severe landslide disasters, especially in the region of Qishan River and Lao-Nong River watershed within Kaoping Basin. The goal of this study is to develop a forest ecological vulnerability assessment for the watershed of Kaoping Basin by integrating remote sensing (RS) and geographic information system (GIS) techniques, by factor analysis to find causes of landslides and calculating the weight for each factor, and by the utilization of environmental vulnerability indices. The landslide area caused by Morakot typhoon could be used as a verification for the vulnerability assessment herein. According to results, the environmental vulnerability of Qishan River and Lao-Nong River were classified into five degrees, namely are high, slightly high, moderate, slightly low and low. The area studied is a watershed with abundant vegetation; however, the impact of extreme precipitation has made the watershed highly vulnerable and unstable. The result of this study reflects the vulnerability of the watershed. By identifying vulnerable areas could help with strategy-making in restoration, to restore the vegetation of landslide areas and the management of the watershed.

Keyword: Vulnerability, Landslide, Extreme Precipitation.