

Analysis of Soil Erosion and Deposition in Nanfeng Village Watershed Using USPED

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Abstract: Soil erosion is a widely distributed natural phenomenon around the world. While many studies have examined soil erosion in watershed areas in Taiwan, there is limited analysis specifically focusing on soil erosion in the Nan-feng Village watershed of Nantou County. Therefore, this study estimated spatially distributed soil erosion using the widely recognized soil erosion model USPED (Unit Stream Power-Based Erosion/Deposition). Taking into account the rainfall factor, soil erodibility factor, topographic sediment transport factor, cover and management factor, and conservation factor within the USPED model, by comparing the rill erosion ($m = 1.6$, $n = 1.3$) and sheet erosion ($m = 1.0$, $n = 1.0$) parameters of the topographic sediment transport factor, areas with the most severe soil erosion can be identified as potential hotspots. The study further validates the model analysis using satellite imagery. The results indicate that areas prone to erosion are often associated with land development, and cultivated land usually has significant soil loss.

Keywords: Soil erosion; Nanfeng Village watershed; Taiwan,USPED