

河川泥砂入流量推估-以莫拉克颱風林邊溪流域為例

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摘 要

由於流域集水區內地質脆弱，在颱風來襲時，豪雨常造成崩塌及土石流等天然災害，且大量土砂堆積於河道可能於下次颱風洪時引發嚴重災害。是故，若能合理推估河川泥砂入流量，進行河道沖淤模擬，實為防災之重要課題。本研究以莫拉克颱風下林邊溪流域為研究案例，經由衛星影像判釋颱風事件後集水區內崩塌地的面積，配合經驗公式推估崩塌地的泥砂產量；再以土壤沖蝕模式概估集水區各事件的坡面總產砂量。坡面總產砂量與崩塌地泥砂產量經過遞移率推估泥砂流入河川之泥砂入流量。最後透過水理輸砂模式 HEC-RAS 模式進行河道沖淤模擬和新埤站之泥砂入流量推估，最後再與新埤站之實測流量-懸浮質輸砂量率定曲線配合經驗公式推估之泥砂入流量進行分析比較。

關鍵詞：莫拉克颱風、崩塌地、土壤沖蝕、泥砂入流量式

ABSTRACT

Due to the fragile geological conditions of watersheds in Taiwan, heavy torrential rains induced by typhoons often inflict natural disasters such as landslides and debris flow. Meanwhile, the deposited sediment in the river channel may induce large damages in the next typhoon-induced flood. As a result, it is vital to reasonably estimate the sediment discharge for sediment simulation. This study focused on Linpian Creek Watershed. First, the areas of landslides are indentified by using the satellite images and the depths of landslides are estimated by empirical equations. The soil erosion on the hillsides is also estimated. The sediment discharge from landslides and soil erosion is then estimated by the delivery rate multiplying the volume of sediment of landslides and soil erosion. The above mentioned sediment discharge is treated as lateral sediment discharge. The sediment discharge of Hsinpei Station and sediment transport simulations are performed by the HEC-RAS. The results are compared with that estimated by the rating curve of discharge and suspended load of Hsinpei Station accompanying empirical relations.

Keywords : Typhoon Morakot, landslides, soil erosion, sediment discharge