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烏石坑溪流域土砂變化探討與驗證

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摘　　要　921 集集地震後造成烏石坑溪流域上游集水區內，地層構造的錯動及表土的崩塌與鬆動，而當土砂安定條件失衡，又遇豪大雨時，導致不安定土砂材料隨雨水流至下游形成土砂流，致使下游居民生命財產受到嚴重威脅。本文針對集水區內土砂現況、土砂來源分析及流量歷線推演，並配合流域土砂管理收支的應用，探討並驗證 921 地震後，烏石坑溪流域內土砂生產、輸送過程與土砂變遷，期能提供作爲土砂流發生地區流域治理參考。

關鍵詞：集水區、土砂觀測、921 集集地震。

Study and Verification of Sediment Change in Wu-Shin-Keng River Basin

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ABSTRACT　The tops of the mountain slopes of the river basin were severely destabilized by the Chi-Chi Earthquake in 1999. The heavy rainfalls caused a lot of runoff during the typhoons period. Landslides, floods, and debris flows would frequently occur in the downstream of river basins. The lives and properties of downstream residents were seriously threatened by those events. Therefore, managing the runoff and sediments in the watershed becomes more and more important. This paper aims to study the process of runoff, sediment yield and transportation in the watershed. Besides, we try to collect the sediment discharges and hydraulic data to simulate the runoff hydrograph of Wu-Shin-Keng River basin. This model is based on several hydraulic theories, and is developed with major modules, including the water hydrograph module, sediment transportation module, sediment yield module from landslide and soil erosion module in watersheds. This study analyses the stability and sensitivity of the parameters, and applies the inflow-outflow model to the river basin. It can be used as an important reference for a watershed manager to form programs for control and prevention.

Key Words:　watershed, sediments observation, chi-chi earthquake.

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