

使用 QPESUMS 雨量資料建立坡地災害降雨警戒模式

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摘 要 建立以雨量為基礎之土砂災害警戒模式，其關鍵在於如何選定適當的雨量指標，以及如何建立警戒臨界值(線)。台灣自 2005 年起正式採用降雨驅動指標(Rainfall Triggering Index, RTI)建立各鄉鎮之雨量警戒值，並建立土石流紅、黃警戒發布機制，十年來已有效降低民眾傷亡。惟 RTI 模式採用的有效累積雨量，係以逐日折減方式納入前七日之降雨，在某些特殊型態之雨場(如長延時、低強度)時，常導致警戒誤報率偏高。為此，本研究提出以逐時折減之有效累積雨量計算方式，並據以求出自 2005 年起氣象局 QPESUMS 各網格之歷史最大有效累積雨量，配合災後航遙測影像判識結果，以及水土保持局歷年重大土砂災例調查報告，建立各網格之坡地災害雨量警戒值。以 2015 年蘇迪勒颱風新店及烏來山區為例，本研究建立之警戒模式可有效預測災害發生之時間及區域。

關鍵詞：坡地災害、預警系統、QPESUMS、有效累積雨量。

A Rainfall-based Warning Model for Predicting Landslides Using QPESUMS Rainfall Data

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ABSTRACT To establish a rainfall-based warning system for sediment disaster, how to select an appropriate rainfall index and demarcate the critical line is the essential procedure. The Rainfall Triggering Index (RTI) model was adopted to set up the critical rainfall for each township since 2005 in Taiwan, and the debris-flow warning system based on the RTI model is successful in reducing the casualty. However, the antecedent rainfall using the deduction coefficient of "t" days in the RTI model would cause the false alert rate higher in some rainfall patterns (e.g., long-term duration and lower rainfall intensity). This study suggests a modified method to calculate the antecedent rainfall and effective accumulated rainfall to improve above-mentioned problems, and we also propose a novel model, which uses the QPESUM data for the past decade, the identified results of remote-sensing image, and the disaster records, to predict landslides. In the case study of Xindian and Wulai District during Typhoon Soudalar in 2015, the new warning model could offer well-predicting for occurring time and areas of landslides.

Key Words: Sediment disaster, landslide, warning system, QPESUMS, accumulated rainfall.