

以逕流歷線建置土石流預警系統之研究

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摘要

台灣屬於多種天然災害可能衝擊之地區，其中以淹水、土石流及地震災害為最常發生之事件，如地震所引起之土石鬆動，一旦發生降雨便易引發土石流，危害人民生命財產安全。目前在土石流災害預警上，乃是採用土石流觀測系統，其利用土石流發生時所發出之警報，告知下游民眾即刻撤離，但目前所使用的鋼索檢知器、地聲檢知器及紅外線攝影機(CCD)，皆屬於事發型的土石流觀測系統，可應變時間較短。本研究透過流量歷線之變異點，即早發現土石流發生之潛勢，以求增加預警之時間。為此，首先彙整前人相關研究，對現行之土石流觀測系統進行探討，再與逕流歷線預警系統比較，以研判該預警系統建置之可行性，由此可知，透過動態降雨-逕流歷線分析模式來建置預警系統，進行流量變異點分析，推估土石流發生時機，更有助於集水區土石流警報之發布及應用，且未來對土石流之預警應朝向即早預判之方式，加快相關單位對於災害應變處理時機，避免土石流致災之威脅。

(**關鍵詞**：逕流歷線、土石流、預警系統)

Establishment of Debris Flow Warning System by Using Runoff Hydrograph Model

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ABSTRACT

Taiwan is vulnerable to several natural disasters such as landslide, floods, debris flow, and earthquake. Rainfall and/or earthquake induced landslides could easily trigger debris flow and then threaten the safety of properties and human being. Currently, the debris flow observation systems are mostly adopted as the warning system to alarm the residents to evacuate in advance while encountering the disaster of debris flow. The devices of wire sensor, geosound sensor, and infrared cameras (CCD) are classified as the post-event type sensor, which only has the shorter response time, and can hardly be satisfied with as the precaution system. The purposes of this study is to use the change point derived from comparing theoretical and observing runoff hydrograph model for early detecting the potential occurring of debris flow so as to increasing the response time. The references of related previous studies and the currently used debris flow observation systems are collected and explored to compare with the warning system established using runoff hydrograph model. The results show that the model can be applied to establish an efficient warning system for debris flow occurring precaution.

(Keywords : Runoff hydrograph, Debris flow, Debris flow warning system)