

極端降雨事件引致高屏溪流域水文環境指標變異度之分析研究

An Indicator of Hydrologic Alteration (IHA) for Kaoping Watershed Management under Extremely Heavy Rainfall Event in Southern Taiwan

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摘 要

因應未來極端降雨事件所造成之水土災害，實有必要就受災集水區在極端降雨變異條件下，自然環境受創產生劇烈變化後之災害發生特性進行分析探討，並據以研擬水土災害防治、國土保育利用及防救災體系等因應對策，以供相關單位參考。因此如何考量極端氣候變異條件下，進行水土災害發生機制探討，以及水文環境變異調查分析，以提昇集水區環境之耐災力與抗災性，本研究應用 GPS/GIS/RS 科技整合技術，進行水土砂受災區之野外調查和相關災情資訊之蒐集分析，以期掌握致災區域範圍與現況。本研究選取莫拉克風災受創嚴重之南台灣高屏溪流域作為空間研究區域，並選取近 10 年內重要颱風暴雨衍生之極端降雨事件導致流域內水土災害發生機制及水文環境變異對區域致災之最大可能影響範圍為主要研究重點，其研究成果顯示，高屏溪流域不論豐枯水期，其含砂量均有顯著遞增之趨勢，普遍增加約為 25~33%，且其枯水期有延長趨勢。

關鍵詞：極端降雨、土砂災害、集水區經營

Abstract

Very serious landslides, debris flow, flooding and sedimentate related disasters were induced by the Morakot heavy rainfall event with 2,900mm within continuous 3 days in Kao-Ping area. As a result, this research mainly focuses on applying field investigations integrated with GPS/GIS/RS techniques to analyze and investigate the characteristics and mechanism of sedimentation disaster and flooding hazard. In order to decrease the risk of sediment disaster and flooding hazard, the strategy of land conservation, hazard mitigation system and disaster control program should be proposed and executed as soon as possible. Meanwhile, study on the indicator of hydrologic alteration (IHA) influenced by this extremely heavy rainfall event become an important issue concerned by the government in Taiwan. This paper was proposed and conducted by the HEC-RAS program developed from American Army Corps Engineering in the USA. Also, Kao-ping watershed was selected as an important study area where was due to its seriously damaged by Morakot typhoon in 2009. The change of hydrological environment resulted from this heavy rainfall event during the past 10 years would be necessary by this research. All results indicate that the concentration of pediment for the Kao-ping Watershed was increased 25~33% during the rainfall season; also the period of drought season was significantly extend in this watershed.

Keywords : extremely heavy rainfall, sediment disasters, watershed management

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