

坡地利用影響山崩潛勢之評估模式建置 —以寶來地區歷經莫拉克颱風為例

陳怡睿* 林洧全 謝舜傑

摘要 近年來，臺灣隨著經濟發展及社會變遷，對自然環境的破壞及土地資源不當使用也日趨嚴重，加上又位居西太平洋熱帶氣旋區上，時常受到颱風、暴雨侵襲，如遇雨量偏多季節，便容易發生山崩、土石流等災害，危及生命財產安全。因此，建立一套山崩潛勢評估模式，提供政府機關防災規劃時之參考實屬必要。本研究以莫拉克颱風侵襲台灣期間，高屏流域之寶來地區為研究範圍，運用類神經網路技術輔以紋理分析，進行衛星影像之判釋分類，用以擇取地表資訊與災害紀錄資料；透過相關性檢定，及結合多變量不安定指數，推算研究區山崩潛勢等級，再運用地理資訊系統繪製區域山崩潛勢圖。其中，本研究所考量之山崩災害潛勢因子包括坡度、坡向、地質、高程與坡地利用情形等 5 項。藉由山崩潛勢評估模式之建置，將可提供相關防救災單位針對高潛勢地區擬訂治理對策之參考，期減少人民生命財產之損失。

關鍵詞：山崩潛勢、類神經網路、多變量不安定指數、紋理分析、地理資訊系統。

Construction of an Evaluation Model for Landslide Potential due to Slope Land Use: Case Study of Baolai Following Typhoon Morakot

Yie-Ruey Chen* Wei-Chung Lin Shun-Chieh Hsieh

ABSTRACT Because of the rapid economic growth and social change, the development of slope land in Taiwan is inevitable. However, landslides occur frequently in high-altitude and heavy-rainfall regions during typhoons. To make the execution of the regulation of slope land development more efficient, the construction of an evaluation model for landslide potential is very important. In this research, artificial neural networks with texture analysis are employed for classifying high resolution satellite images of Baolai region following Typhoon Morakot to obtain digital records of the ground and disaster. By using a correlation test and the multivariate instability index method, the landslide levels of the research area were classified. Then, through the geographic information system the landslide potential map was plotted to distinguish high potential regions from low potential regions. The factors considered in the model were slope angle, aspect, geological situation, elevation and slope land use situation. In this way, the proper countermeasures to prevent serious damages in high potential regions from landslide could be made.

Key Words: landslide potential, artificial neural network, multivariate instability index method, texture analysis, geographic information system.