

建立流域影像分類之規則集與其應用之可行性評估

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摘要 極端氣候下的災害事件分布廣泛，且相互影響之關聯性易使災害規模擴大，藉由衛星影像判釋具廣域且快速的特色能夠有效協助研擬防災策略。本研究建立一套流域衛星影像分類之規則集，當中引入物件式影像分析方法，使分類流程依據人工判釋之經驗與知識，針對流域影像分類出周邊河川地形單元、崩塌地以及地工災害的位置。實際應用此規則集於不同流域以及不同解析度之衛星影像，透過比對現地勘查資料和計算誤差矩陣來評估其邏輯之可行程度。結果顯示，本研究所建立之規則集邏輯泛用於不同流域、不同影像，且任何使用者之操作經過適當的調整皆具有重現性及相當的判釋精度，提供災害管理、土地利用之深入探討一項工具。

關鍵詞：流域衛星影像、物件式影像分析、規則集、地工災害。

Establishment of the Watershed Image Classified Rule-Set and Feasibility Assessment of Its Application

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ABSTRACT Extreme weather disasters are widely distributed. Moreover, the mutual relations between such disasters can easily make them even more extensive. Rapidly obtained satellite images of vast areas can be effective in helping to develop disaster prevention strategies. This study established a watershed satellite image classification rule-set by using the object-based image analysis methodology. Several surface features in the watershed image were been classified, including main channels, secondary channels, sandbars, alluvial fans, landslides and place of the geotechnical damage. This study practically applied this rule-set in different watersheds and different-resolution satellite image. Also assessed the feasibility of the rule-set by comparing with the investigation photos and statistical analysis. The results show that the rule-set logic can be applied flexibly in different watersheds and different images. The classification of the rule-set is reproducible and accurate. As this result, we can apply the rule-set to disaster management and the land use planning in the future work.

Key Words : Watershed satellite image, object-based image analysis, rule-set, geotechnical damage.

一、前言

民國 98 年 8 月 7 日至 9 日中度颱風莫拉克 (Morakot) 襲台期間，挾帶之西南氣流引發高強度長延時之豪大雨，台灣中南部地區降雨主要集中在 8 日至 9 日期間，於 48 小時內最大累積雨量超過 2000 公釐，此

鉅量之累積雨量造成重要的河川流域內多起災害，包括河道沿岸掏刷、邊坡崩塌、淤積、堰塞湖以及嚴重水患，並引發多處道路中斷、橋梁毀損、潰堤等等的地工災害，其中又以高屏溪、曾文溪、濁水河流域之災情最為嚴重 (林基源，2009；國家科技防災中心，2010；陳天建，2009)。此種極端氣候下的災害事件具