應用 BigGIS 於 2023 年卡努颱風事件之南投仁愛遙測判釋

莊承穎[1][2]* 陳振宇[1] 陳國威[1] 詹婉妤[1]

摘　　要　　氣候變遷導致之極端降雨事件發生頻率已明顯增加，2023 年 8 月卡努颱風在南投縣仁愛鄉 24 小時累積雨量便達 783.5 毫米，為重現期超過 200 年的短延時強降雨事件，並導致山坡地發生廣域、大面積崩塌，崩塌地點多發生於人員難以到達的區域，缺乏相關災情資料。為快速掌握災害範圍及受災程度，可透過颱風事件期間的時空遙測影像來獲取災區資訊。因此，本研究應用農村水保署所建立的巨量空間資訊系統 (BigGIS)，回顧卡努颱風事件前、中、後期所收集的衛星影像、氣象和地理資訊數據。接著，整合災後判釋的新生崩塌區、土石流影響範圍以及災前和災後多時期衛星影像的變化，評估災害對該地區的影響。研究結果顯示，BigGIS 的應用能夠提供快速的災害風險評估，作為受損地區災後復原工作的重要資訊。此方法若能廣泛應用於未來的災害事件，將提高災害風險評估的效能，更好地保護民眾的生命和財產安全。

關鍵詞：BigGIS、卡努颱風、遙測。

Utilizing BigGIS for Disaster Assessment: A Case Study of the Typhoon Khanun in Ren-ai Township, Nantou County, Taiwan

Cheng-Ying Chuang [1][2]* Chen-Yu Chen [1] Kuo-Wei Chen [1] Wan-Yu Chan [1]

Abstract　　The frequency of extreme rainfall caused by climate change has increased significantly. In August 2023, Typhoon Khanun accumulated 783.5 mm of rainfall in Ren-ai Township, Nantou County in 24 hours. It was a short-term heavy rainfall event with a return period of more than 200 years. As a result, widespread and large-scale landslides occurred in areas that were difficult for personnel to access, resulting in a lack of relevant disaster data. To enhance disaster management and response capabilities, this study explores the potential of utilizing spatiotemporal remote sensing imagery during the typhoon to obtain information about the disaster area. Accordingly, this study applies the BigGIS developed by the ARDSWC to collect the satellite images, meteorological data, and geographical information during the pre-, mid-, and post-event of Typhoon Khanun. Furthermore, the study integrates the post-disaster interpretation of newly formed landslide areas and the changes observed in satellite images from post-event. The results of this study demonstrate that the application of BigGIS provides a rapid and effective approach for assessing disaster. The potential widespread adoption of this methodology in future disaster events and the promise of enhancing disaster assessment efficiency, thereby safeguarding the lives and property of affected communities.

Keyword: BigGIS, Typhoon Khanun, remote sensing

[1]農業部農村發展及水土保持署，*通訊作者 E-mail:cyc0109@mail.ardswc.gov.tw
　Agency of Rural Development and Soil and Water Conservation, MOA
[2]財團法人農業科技研究院
Agricultural Technology Research Institute, R.O.C