



## **Slope stability in a dynamic environment: A Case Study of the Tachia River, Central Taiwan**

J. C. Lin (1) and D. Petley(2)

(1)Department of Geography, National Taiwan University, Taipei, Taiwan,

(2) Department of Geography, University of Durham(jclin@ntu.edu.tw/Tel & Fax:+886 2 223687056)

### **Abstract**

It is well-established that landslides are extensively triggered as a result of large seismic events in upland areas. This paper examines the Tachia River basin in western Taiwan, which was extensively affected by landslides during the 1999 Chi-Chi earthquake. Using series of aerial photographs and satellite images, this study seeks to examine the area affected by landslides in a time series. It is shown that although there was extensive co-seismic landsliding, the greatest intensity of landslides occurred substantially after the main earthquake as a result of high intensity rainfall events. However the slopes in many slide area are still active eight years after the Chi-Chi earthquake.

The results show that (1) the slope stability can be divided into two parts: triggering mechanism and subsequently erosion by fluvial processes. Each factor contributes to different types of slope failure; (2) In many cases, rivers in Taiwan belong to transport-limited type, however, landslides become an important factor to supply sediments. Slope stability highly depends on the bank erosion of Tachia river; (3) The delivery of sediment could be enhanced and enlarged dramatically after heavy rainfall because of slope failure.