



## Using Google Earth To Interpret The Southern Taiwan Hsiaolin Village Catastrophe

Y. H. Lin (1), C. M. Huang (1), J. Keck (1), L. W. Wei (1), and K. L. Pan (2)

(1) Disaster Prevention Technology Research Center, Sinotech Engineering Consultants, INC. Taipei, Taiwan, ROC  
(lec@sinotech.org.tw), (2) Graduate Institute of Applied Geology, National Central University, Chung-Li, Taiwan, ROC

The August, 2009 Typhoon Morakot resulted in accumulated rainfalls exceeding 2000 mm and the triggering of a massive debris flow that buried Hsiaolin village. Hundreds of people were killed and both domestic and international natural disaster prevention agencies took note of this large scale disaster that was not prevented. Interpretation of Google Earth satellite images reveals that the Hsiaolin debris flow originated in a single location and then split into two parts. The northern debris flow, the smaller of the two parts, flowed within a ravine. The southern part of the debris flow, much larger than the northern part, was responsible for the burial of Hsiaolin village. The movement of the debris flow can be divided into three processes. First a slope failure and subsequent debris flow occurred within a curved ravine. Second, the debris flow eroded the bank of the ravine laterally, causing translational failure of the ravine walls. A massive debris flow, made up of a combination of materials from both the original debris flow and the ravine walls, jammed within the ravine. Finally, as a result of the jam, the debris flow was redirected towards Hsiaolin village.

Overlaying locations of the post-Hsiaolin debris flow landforms on top of pre-failure satellite images reveals that characteristics of the post failure landforms match perfectly with characteristics observed in the pre-failure satellite images. This finding supports the thought that large scale geologic disasters are reoccurring. This finding also suggests that areas near villages can use simple satellite image analysis to rapidly identify ancient landslides and that such information may help early evacuation planning. With such planning, property and life losses due to natural disasters can be reduced.

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