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The Hungtsaiping landslide:A kinematic model based on morphology

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A large and deep-seated landslide at Hungtsaiping was triggered by the 7.3 magnitude 1999 Chi-Chi earthquake. Extensive site investigations of the landslide were conducted including field reconnaissance, geophysical exploration, borehole logs, and laboratory experiments. Thick colluvium was found around the landslide area and indicated the occurrence of a large ancient landslide. This study presents the catastrophic landslide event which occurred during the Chi-Chi earthquake. The mechanism of the 1999 landslide which cannot be revealed by the underground exploration data alone, is clarified. This research include investigations of the landslide kinematic process and the deposition geometry. A 3D discrete element method (program), PFC3D, was used to model the kinematic process that led to the landslide. The proposed procedure enables a rational and efficient way to simulate the landslide dynamic process.

Key word: Hungtsaiping catastrophic landslide, kinematic process, deposition geometry, discrete element method