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# Estimating hazards potential by a landslide dam in the Chihpen river, Taiwan

**C. D. Jan** and C. P. Ko

Disaster Prevention Research Center, National Cheng Kung University, Taiwan

On October 17, 2005, a middle-scale landslide occurred in the upstream slope of Chihpen River at Taidung County in the east part of Taiwan. The landslide has about 350 m long, 250 m wide, and 3 m depth, and blocked the upper portion of river and formed a landslide dam of sediment 223,000 $m^3$. Failure of the resulting landslide dam has the potential to cause potentially disastrous flash flooding in the lower reaches of the Chiphpen valley. The Disaster Prevention Research Center at National Cheng Kung University was authorized to conduct the Chihpen Landslide-Dam Disaster Migration Project to assist the Government of the Taidung County in responding to the potential risk of flooding in the Chihpen River valley caused by the landslide dam. For understanding the characteristics of the landslide dam and assessing the stability of the dam, a series of field investigations were conducted. The maximum water storage by the landslide dam of height 19 m was 383,000 $m^3$. The activity of the landslide and the movement of the landslide dam and the change of the stored water were monitored by field observation, remote-control-vehicle photographing as well as by analyzing satellite images. The stability of the landslide dam was analyzed. The detailed analysis of the flood hazard posed by a landslide dam break was undertaken by using the HEC-RAS program. The movement of surge wave by dam break was analyzed and used to conduct the lower Chihpen River flooding scenarios as a basis for develop the evacuation plan and the migration actions in the lower Chihpen River.