



Rainfall induced landslide investigation and back analysis using UAV results and GPS monitoring results

Kuo-Lung Wang (1), Jun-Tin Lin (1), Yi-Hsuan Lee (1), Jheng-Ru Lai (1), Li-Wen Chen (1), Tsung-Wen Chen (1), Chin-Wei Wu (1), Meei-Ling Lin (2), and Hao-Nien Chen (1)

(1) National Chi Nan University, College of Science and Technology, Civil Engineering, Nantou County, Taiwan (klwang@ncnu.edu.tw), (2) National Taiwan University, Civil Engineering, Taipei, Taiwan

Rainfall in May to June can be hazardous. The documented landslide events due to same period rainfall can traced back to 2006, 2012, 2017. Rainfall in these cases are all more than 1000mm. Rainfall in June, 2017 can be separated into two groups of events, which was initiated in 1st and 13th. The accumulated rainfall in the study area are 900mm in 4 days and 600mm in 5 days, separately. Several road sections blocked due to rock fall, debris flow and landslide. Investigations initiated after second rainfall event. DSM and orthophoto produced with drones for further analysis. Five landslide cases area ranges from 20 to 70 hectares are analysis in this study, which are Lushan hot spring area, Lushan Tribe, Chunyang, ChingJin, and Renjiguan sites. The largest displacement observed in these cases is more than 100cm. According to our previous study, displacement initiated when rainfall reached 300mm and velocity increased after 600mm. The first event in 2017 reaches 900mm, which is larger than previous study. Following event occurred in one week and there is no chance to lower ground water level. Thus induced severe landslides during second event. 3-dimensional limit equilibrium and finite element analysis adopted to discover landslide mechanism in these cases. Moreover, interferometric stacking helps to identify landslide area and discover tension crack in these events.