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Analysis of the mudstone slope failure triggered by the 2016 Typhoon Megi

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Encompassing the tropical monsoon and mountainous geo-environment associated with frequent typhoons, rainfall-induced landslides have been an important issue in Taiwan. On September 28, 2016, due to the heavy rainfall brought by the Typhoon Megi, a mudstone slope failed in Yanchao District, Kaohsiung. The sliding source directly damaged a house and claimed three lives. The objective of this study is to understand the failure mechanism of this sliding event. We first conducted site investigations and laboratory tests including sieve analysis and unit weight, specific gravity, and field permeability tests. Acknowledging that finite element analysis has been a practical and effective alternative to evaluate the failure mechanism of landslides (1-3), this study utilized the data based on the site investigations and laboratory tests and performed a coupled stress and pore-water pressure finite element analysis to explore the mudstone slope failure. The characteristics of the pore water pressure, saturation, and displacement subjected to the rainfall were rigorously examined in hope to reveal the failure mechanism of such event.

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