

EGU2020-12211

<https://doi.org/10.5194/egusphere-egu2020-12211>

EGU General Assembly 2020

© Author(s) 2020. This work is distributed under the Creative Commons Attribution 4.0 License.



Influence of infiltration on Babaoliao shallow landslide in Taiwan using hydro-mechanical coupled model

Ya-Sin Yang and Hsin-Fu Yeh

Department of Resources Engineering, National Cheng Kung University, Tainan, Taiwan (moocat027@gmail.com)

Babaoliao landslide is located in Chiayi County of Taiwan. The geological drilling and core interpretation in previous investigation showed that exist 1 to 2 meter depths of residual soil layer above the bedrock. In this area, shallow landslides frequently occur due to the intense rainfall events. An understanding of the hydro-mechanical change under rainfall infiltration within hillslope is critical to capture the slope stability. This study used hydro-mechanical coupled model and finite element analysis to compute the field water content and stress suction, and then assess the field slope stability based on theory of local of factor. Results showed the response of internal hydraulic behavior distribution is related to terrain and the depths of bedrock. The impact of rainfall on slope stability concentrated in shallow residual soil area, since higher permeability of soil cause rainfall infiltrate into hillslope easily and form lateral flow paths, thus limiting the depths of wetting front. The discontinuity of water content distribution within hillslope may accelerate the change of hydro-mechanical behavior and unstable slope development in the hillslope. This study demonstrated the varied distribution of water content, suction stress and LFS over time and space and got the insight into the relativity unstable range of the shallow slope affected by rainfall event.