



## **Imaging rainfall infiltration processes with the time-lapse electrical resistivity imaging method**

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Electrical Resistivity Imaging (ERI) was carried out continuously for ten days to map the subsurface resistivity distribution along a potentially hazardous hillslope at the Jieshou Junior High School in Taoyuan, Taiwan. The inversions confirm the viability of ERI in tracking the movement of groundwater flow and rainfall infiltration by recording the variation of subsurface resistivity distribution. Meanwhile, relative-water-saturation (RWS) maps can be obtained from ERI images via Archie's Law, which provide a more intuitive reflection of the variation of subsurface rainfall infiltration and a more capable means of estimating the stability of a landslide body. What is more, we then found that the averaged RWS is significantly correlated with daily precipitation. Our observations indicate that real-time ERI is effective in monitoring subterranean rainfall infiltration, and thereby in estimating the stability of a potential landslide body. When the agglomerate rainfall in the landslide slippage surface was infiltrated quickly without sustaining hydraulic pressure along the landslide slippage surface, the probability of landslides occurring was very low. On the contrary, the probability of landslides occurring could be increased due to the overpressure of pore fluids.

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