

# Effects of vegetation on slope stability - understanding mechanical and hydrological reinforcement at different scales

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## ABSTRACT

Vegetation can reinforce soil slopes through both direct mechanical reinforcement and hydrological reinforcement, as plants generate suctions that increase effective stress between soil particles. We have studied relevant mechanical and hydrological processes at a range of scales: measuring the mechanical properties of individual plant roots [5]; the reinforcement that roots offer to intact soil cores [4]; the reinforcement of scaled model slopes within a geotechnical centrifuge subject to simulated rainfall events [4, 8]; and the monitoring of both mechanical [6, 7] and hydrological [1, 2] reinforcement of field-scale slopes. The effects of plant roots on changing soil structure and hydrology with time will also be considered [3].

This talk will consider what we can learn from experiments and modelling at each scale, and where significant gaps still exist in our understanding. The potential to improve slope management by appropriate choice of species and management regime will be discussed, together with problems that may be caused when vegetation is removed and not replanted promptly.

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