Quantification of rock control in geomorphology

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QUANTIFICATION OF ROCK CONTROL IN GEOMORPHOLOGY

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Abstract

Rock control, the influence of rock properties on landform development, has for long been a relatively under-researched topic, but numerous techniques have been developed, especially by geotechnical engineers and stone conservationists that are now being applied to geomorphological issues by geomorphologists. These techniques range in scale from the quantification of major discontinuities through to analysis of micro-pores. Rock control studies that have taken place over the last few decades have contributed important insights into our understanding of such diverse phenomena as (1) river terraces, bedrock channel forms and gradients, pot-hole development, drainage density and gully (badland) development, (2) slope forms and failures, especially with respect to rock mass strength, (3) the form of glacial troughs and of subglacial erosional landforms, (4) weathering controls on rock durability and the association of weathering with porosity, (5) classic karst features including various types of karren, (6) sandstone landforms, (7) inselbergs and tors, and (8) cliffs and shore platforms.