



Large slope instabilities in sandstone desert evolution; combined modelling and dating of failures: implications for landscape development.

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This paper presents the results from work undertaken examining the evolution of the desert environment around Al-Quwayra south western Jordan. The research has identified the role of large rock slope failures in both the formation and continued evolution of the Rum sandstone inselbergs. Surprisingly little field evidence of large rock slope failures remains, which is attributed to be a result of the mechanical breakdown of the failed mass exacerbated by the harsh weathering environment. The low frequency of rock slope failures makes assessing the role of these events in the evolution of the inselbergs problematic.

This is addressed by collecting geotechnical and geomorphological data and using this as the basis for developing distinct element computer models of inselberg behaviour. Model output provides information on the role of rock slope failures in the evolution of the inselbergs. The project aimed to constrain the temporal pattern of failure by dating of the exposed failure surface using Terrestrial Cosmogenic Nuclides (TNC's). In combination the field study, modelling and dating make a considerable contribution to our understanding of evolution of the Rum desert. The study also highlights some of the significant challenges involved in constraining and dating the long-term temporal pattern of slope failures in this environment and beyond.