



## **The emergence of a complex (high-relief) landscape in a simple physical experiment**

Liam Reinhardt (1) and Michael Ellis (2)

(1) University of Exeter, School of Geography, Penryn, TR10 9EZ (liam.reinhardt@ex.ac.uk), (2) Climate Change Science, British Geological Survey, Kingsley Dunham Centre, Keyworth, Nottingham, UK NG12 5GG

We have run a series of physical experiments that simulate the emergence of a complex high-relief landscape through non-linear interactions between river incision and mass movement under a constant climate. Despite the small number of external variables allowed in our experiments we observe striking internal variability at the sub-catchment scale, e.g. river networks evolve through avulsions and knickpoint propagation. Hillslopes and channels are strongly coupled through mass movement and sediment transport within channels. We captured these internal dynamics through a unique set of measurement systems that allow us to relate the 3D evolution of topography to sediment flux from the model-orogen. Our experimental apparatus is an erosion box in which two opposing panels slide downwards, so simulating base-level fall across emerging topography. Rainfall is generated by an ultra-fine misting apparatus.