



## **Drone hyper-spatial extreme event reconstruction, but can we see the dirt from the trees?**

Nik Callow (1) and Simon May (2)

(1) The University of Western Australia, Geography, Australia (nik.callow@uwa.edu.au), (2) Quaternary Research and Applied Geomorphology, Geographisches Institut, Universität zu Köln, Germany

Extreme events are disproportionately significant in hydrology and geomorphology. Their infrequent, unpredictable or chaotic nature means that we typically lack data from before, during and after an event, or at spatial scales required to understand processes, connectivity and linkages. Drone photogrammetry offers new tools to understand connectivity during such events and deliver a new scale of understanding. Using a cyclone washover deposit, we demonstrate how drone aerial imagery and the resulting structure-from-motion (SfM) data can be processed and filtered to create high accuracy bare-earth surface models. We then explore how high resolution topographic models of connectivity can support in better understanding connectivity and depositional controls on sediment archives and process interpretation and reconstruction. We also explore the issues around resolving connectivity using hyper-spatial data, including the need for supporting development in modelling and simulation required to use high resolution topographic data and how we can advance our understanding of connectivity in the absence of high-resolution hydrological data.