



Stone Pavements: Formation Processes and distribution

Markus Fuchs (1), Johanna Lomax (1), and Michael Dietze (2)

(1) Justus-Liebig-University Giessen, Geography, Giessen, Germany (markus.fuchs@geogr.uni-giessen.de), (2) GFZ German Research Centre for Geosciences, Geomorphology, Potsdam, Germany

Reconstructing the evolution of arid landscapes is vital but challenged by the limited availability of appropriate environmental archives. A widespread surface feature of arid landscapes – stone pavement – traps eolian fines and forms an accretionary archive, growing with time and thereby recording essential information about the conditions under which it evolves. However, the potential of these sediment archives for reconstructing paleoenvironments can only be used, if (1) the process of sediment accumulation below the stone pavement is understood, and (2) its temporal behaviour and dynamic can be reconstructed. In this regard, optical stimulated luminescence (OSL) dating is of crucial importance for answering these fundamental questions.

Based on various regional examples from different landscapes around the world (USA, Israel, Canary Islands, Jordan) we present stone pavement-covered soil-sediment sections and discuss their formation process. Central to this discussion are challenging OSL results from our extensive dating approach, with the tendency to diverging OSL ages for different grain sizes. From these findings, we deduce a concept of selective sediment incorporation into the fines below the stone pavement and illustrate the importance of OSL dating not only for establishing chronologies, but also to better understand geomorphic processes and their dynamics.