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## Abstract

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Morphodynamics and sedimentation on the Tibetan Plateau are strongly controlled by cold-arid climate conditions and distinct freeze-thaw cycles. In such a periglacial environment mass-wasting processes are dominant on mountain slopes, causing thick successions of talus and colluvium to accumulate. While periglacial slope dynamics are ubiquitous on the plateau today, they were probably much more intense during the various cold stages of the Late Pleistocene. However, the exact nature as well as the timing and duration of such temperature controlled slope dynamics on the Tibetan plateau are not well constrained.

Travertines are secondary carbonates precipitated from hydrothermal springs. On the Tibetan Plateau these types of spring deposits form along neotectonic faults, where super-saturated ground water can penetrate onto the surface, facilitating degassing and carbonate precipitation. Spring carbonate formation further requires non-permanently frozen ground and reasonable humid conditions in order to recharge the ground water aquifer. Travertines hold potential for palaeoenvironmental reconstruction, because they are dateable via U-series techniques and their geochemical, biological and petrographic signature can be used to extract high resolution palaeoenvironmental information. Due to a dense network of neotectonic faults on the Tibetan plateau, travertines are relatively common. Nevertheless, the potential of these hydrothermal spring deposits as an archive for palaeoenvironmental change on the plateau has yet to be explored.

Here we present the first results obtained for an unusual, non-continuous sediment sequence encountered in southern Tibet at an altitude of 4200 m asl. near Chusang village, i.e. a ca. 200 m thick succession of periglacial colluvium alternating with travertine deposits. Preliminary data indicate that travertine deposition at the Chusang hydrothermal spring occurred periodically throughout the Late Pleistocene and extensive travertine precipitation was also responsible for preserving old colluvial sediment. We combine U-series disequilibrium dating with optically stimulated luminescence dating and radiocarbon dating to constrain the depositional history of this unique sediment sequence. Sedimentological logging and geomorphological mapping is used to understand past depositional processes and environmental constraints. Comparison to published high resolution climate records that are continuous in nature (e.g. speleothem records from adjacent catchments and regions) will allow us to link this clastic-chemical sediment sequence into the broader palaeoclimatic framework of High Asia.