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Are slope deposits sensitive to palaeoclimatic events? - evidence for geomorphologic instability during the 8.2 ka event in Central Europe

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Detailed studies of proxies in natural archives, sensitive to climatic conditions of the past, (e.g. ice-cores, marine sediments, lake sediments, tree rings) led to the reconstruction of the 8.2 ka cooling event during the Early Holocene. Whereas the hitherto existing records indicate cooling and desiccation during the event, we present evidence for geomorphic instability during the 8.2 ka event. At the studied site in Central Europe (approx. 70 East of Berlin) different phases of instable soil surfaces and therefore erosion in a small gully system and deposition at an associated fan was reconstructed. Such erosion phases occurred during the during the Younger Dryas period (11.5-12.6 ka), during the 8.2 ka event as well as during phases of agricultural land use (approx. 4.5, 0.8 and 0.2 ka ago). The composition of the fan was studied in five exposures, up to 15 metres long and up to two metres deep and wide. Several sediment layers and soil horizons that developed within the sediment layers were detected with field and laboratory methods. The chronology of deposition is based on 12 radiocarbon data and 11 OSL-data on sediment samples. Additionally, charcoal particles, embedded within the sediments, were analysed semi-quantitatively. The record of the wood taxa embedded within the sediments is consistent with the known vegetation history of the region during the Holocene. Our results indicate a high potential of slope deposits as indicators in order to detect the effects of intensive palaeoclimatic events. Further investigations of other sites have the potential to reveal intensive palaeoclimatic effects

in terrestrial ecosystems and their spatial extension.