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Landscape sensitivity to short and long term climate change during the Late Quaternary: Southern Spain

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The Mediterranean region is one of key significance within palaeoclimatology and geomorphology. The region is highly sensitive to both past and future climatic changes, situated as it is between arid North Africa and temperate Europe. Proximity to the North Atlantic means the region is also exposed to the changes in oceanic circulation that occurred over the last glacial, thought to be responsible for major climatic shifts. The impact of both glacial/interglacial and stadial/interstadial climate shifts have been identified within long pollen records of the Eastern Mediterranean (Allen et al. 1999, Tzedakis 2005) and marine sequences (Cacho et al. 1999, Sánchez-Goñi et al. 2000, Moreno et al. 2005), however, our understanding of the impact of these changes within terrestrial settings is relatively poor. Southern Spain represents a key location for further understanding of Mediterranean landscape response to long and short-term climate shifts because; 1) it lies within a proximal position to the North Atlantic and is therefore, highly sensitive to oceanic forcing, and 2) contains sediment sequences which record shifts in surface processes. Furthermore, due to the development of techniques such as OSL and U-series it is now possible to build robust chronologies extending past the range of radiocarbon dating.
This study will present work from a loess palaeosol sequence in the Nerja region of Southern Spain. The section is located within a deeply incised coastal valley and is composed of interbedded loess/loessic, pedogenic, tufaceous and fluvial sediments. The section presented appears to record major depositional process shifts during the penultimate glacial (MIS6), the last interglacial (MIS5) and the climatic deterioration leading into the last cold stage (MIS4). Last interglacial deposits are characterised by a highly stable landscape, with minimal sediment delivery to channels and floodplains during which time the landscape was characterised by soil formation and tufa development. The deterioration into the last glacial period is characterised by loess accumulation; however, within these deposits incipient palaeosols are present indicating that the general cooling trend was subject to oscillations between warm/moist and cold/dry conditions. Discussion of this sequence will focus on implications for understanding landscape response to climate change on a range of timescales as well as highlighting the sensitivity of the Mediterranean landscape during the Late Quaternary.

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