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Palaeoclimate dynamics in Kashmir Valley; loess palaeosols and shifts in mineral magnetism during MIS 3

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Abstract

Loess-palaeosols in the Kashmir Valley reveal 200 ka of climatic changes. This study analyses loess and loess palaeosols from three lithosections, focusing on Marine Isotope Stage 3 (MIS 3; 60 - 25 ka). OSL dating places them between 54.2+ or -2.1 ka and 30.9+ or -1.1 ka. Mineral magnetism indicates shifts in iron oxide types linked to precipitation and Fe-Mn oxide transformation. Geochemical data show that MIS 3 began with warm, dry conditions and transitioned to colder, wetter periods with weaker weathering and pedogenesis. The valley experienced alternating cold-dry and cold-wet phases within long warm-dry intervals. Mineral magnetic data and clay mineralogy confirm these transitions, highlighting the region's dynamic climate history.

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