Constraining the timing of palaeosol development in Iranian arid environments using OSL dating - DTU Orbit (21/08/2019)

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The ages of palaeosols in arid environments in Iran are constrained using the optically stimulated luminescence (OSL) signal from quartz. The luminescence properties of quartz OSL and K-feldspar infrared stimulated luminescence (IRSL) at 50°C (IR_{50}) and post-IR IRSL at 290°C (pIRIR_{290}) signals are compared to investigate the degree of bleaching of quartz OSL in individual samples at the time of deposition. A comparison between the quartz OSL and K-feldspar IR_{50} ages shows that 12 out of 15 samples were probably well-bleached prior to deposition. The 17 OSL ages constrain at least four broad phases of sediment deposition and soil formation on the central Iranian plateau: (i) prior to, and (ii) during, mid/late MIS 5 (at Isfahan and Lar), (iii) MIS 3 (at Bam, Mahan and probably Isfahan) and (iv) MIS 1 (at Rayen and Jiroft). In summary, there is no convincing evidence for palaeosol formation during MIS 4 and MIS 2; however pedogenesis does appear to have taken place during all other marine isotope stages over the last full glacial-interglacial cycle.

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