

Latest Olduvai short-lived reversal episodes from Chinese loess sediments

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A high-resolution paleomagnetic record of the latest Pliocene has been obtained from wind-blown sediments near Baoji city, southern Chinese Loess Plateau. Characteristic remanent magnetization (ChRM) directions after stepwise thermal demagnetization clearly show that eight short-lived geomagnetic episodes occurred in the uppermost part of the Olduvai subchronzone, and seven of them present a full reversal. Such multiple occurrences of short reversals are not observed at the Lower Olduvai boundary. Anisotropy of low-field magnetic susceptibility confirms that the sediments of these episode intervals still preserve the primary sedimentary fabric, and rock magnetic experiments demonstrate that they have the same magnetic properties as those from other intervals. Assuming a constant accumulation rate through the entire Olduvai subchronzone, durations of 0.5-2.4 kyr are estimated for these short geomagnetic episodes. Our new result together with the worldwide observations shows that occurrence of numerous short reversals is peculiar to the latest Olduvai subchron. This fact indicates that the geodynamo at this time may have been in an anomalous state.