

Three geomagnetic excursions from aeolian loess-paleosol sediments near Baoji, southern Chinese Loess Plateau

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A detailed paleomagnetic record from aeolian sediments in the Baoji section, southern Chinese Loess Plateau, revealed three distinct geomagnetic excursions recorded in loess unit L5, and paleosol units S7 and S8, respectively. Rock magnetic experiments demonstrated that the samples from excursion zones have the same magnetic properties as those from normal or reversed polarity magnetozones. Measurements of anisotropy of magnetic susceptibility (AMS) show that the samples have the primary sedimentary fabric. Assuming constant sedimentation after the Matuyama-Brunhes magnetic polarity boundary, mid-depth ages for these excursion zones are estimated at about 0.41 Myr (L5), 0.76 Myr (S7), and 0.82 Myr (S8), respectively. These estimates are consistent with those estimated using paleoclimatological constraints. From comparison with previously reported excursions in the Brunhes chron, we conclude that the two excursions in L5 and S7 are likely global, and for the one in S8 we need more paleomagnetic investigations to further confirm its global occurrence.