

## Ten Million Years of Paleoclimatic Variability Recorded in Permian Loessite of Eastern Equatorial Pangea

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Analysis and modeling of a ~1000-m-thick stratigraphic series of rock magnetic data from the loessite of the Permian Salagou Formation (south-central France) reveal distinctive Milankovitch-scale paleoclimatic variability through the middle to late Cisuralian (ca. 285–275 Ma). Evidence for predominant orbital eccentricity-scale cyclicity (~10-m-thick) and subordinate obliquity and precession-scale variability (~3.5 and ~1.8 m-thick) occurs in two magnetic susceptibility (MS) series. Laboratory rock magnetic data suggest that the driver of the MS signal in the Salagou Formation is hematite and not magnetite or maghemite common in Quaternary loess. This suggests arid and/or oxidizing climate conditions at the time of loess deposition and/or post-depositional oxidation of magnetite and maghemite. We propose that the rock magnetic signal is pedogenically driven, and that the continental Salagou Formation represents approximately 10 million years of astronomically controlled wet-dry climate cycles. Application of two objective methods designed for cyclic stratigraphy with uncertain timescales indicates depositional rates ranging from 9 cm/kyr in the lower Salagou Formation to 14 cm/kyr in the mid-upper Salagou Formation.

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