



Magnetization processes in Chinese loess; results of some redeposition experiments

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The extensive successions of loess/paleosol units at the Chinese loess plateau (CLP) have provided a unique continental paleoclimate record for the last ca 2.6 Ma based on paleomagnetic reversal stratigraphy. Although there is an apparent good first-order agreement between polarity-records from different sections across the CLP, discrepancies exist to the global marine oxygen isotope stratigraphy. A number of environmental-related factors have been proposed to account for these inconsistencies (erosion/non-uniform deposition, bioturbation, variation in annual precipitation), even if fundamental processes acting and controlling the acquisition of stable remanent magnetization in loess are largely unknown.

Loess is an eolian deposit and hence it may be regarded unrealistic to mimic depositionally related magnetization-processes in the laboratory. However, this restriction also applies to marine and lacustrine sediments, still numerous studies have nevertheless yielded some clues as to which factors may affect acquisition, fidelity and retention of detrital remanent magnetizations in water-deposited sediments.

We have performed several re-deposition experiments to clarify some factors that may control the acquisition of remanent magnetization in Chinese loess. The results to be presented are based on depositing dust produced by disintegrating natural loess (L1) from the southern margin on CLP.

Major findings; A) precipitation cause almost immediate and permanent 'lock-in' of magnetic grains, B) post-depositional 'smoothing' is minor (i.e. negligible pDRM). C) Loess deposited in water carry significant inclination errors. D) Flooded loess show no inclination errors.