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Patterns of active faulting and paleomagnetic data suggest recent (last 5 m.y.) onset of deformation in the eastern Mongolian Altay

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The Altay Mountains in western Mongolia are actively deforming as a far-field result of the collision between India and Asia. Convergence across the Altay is oblique, with at least six major fault zones present. Each of these fault zones preserves evidence for right-lateral strike-slip activity in the Quaternary, coupled with evidence for reverse-oblique slip motion. The NNW-SSE orientation of the major fault zones, and their dextral sense of slip, combined with earthquake source parameters, and GPS velocities indicate that shortening in a NNE direction is accommodated by anti-clockwise vertical axis rotations. Palaeomagnetic rotations of up to 39 degrees anticlockwise have previously been reported from Oligocene-Pleistocene sediments of the Chuya Basin in the Siberian Altay, but little work has been carried out elsewhere in the Altay.

We present new palaeomagnetic results from 16 sites in Miocene - Pleistocene aged sediments from the Dzereg basin in the eastern Altay. Detailed thermal demagnetization has uncovered a multiple-component remanence. The highest stability component provisionally passes fold and reversal tests suggesting a primary or near-primary origin of magnetisation. In common with many other studies of Cenozoic sediments in Asia, our recorded inclinations are slightly shallower than those predicted from the Miocene reference pole for Eurasia, suggestive of a primary detrital remanent magnetisation. The declinations match the reference pole within error, although the mean declination lies slightly anti-clockwise of the reference direction. This lack of rotation in the eastern Altay, together with geomorphic observations of the faults, and measurements of Quaternary slip-rates, suggests that much of the deformation in the eastern Mongolian Altay has occurred within the last 5 million years.