



A new Tertiary paleomagnetic pole at 47 Ma from Mongolia: Implications on the Inclination shallowing problem of Central Asia

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Because of its exceptional topography, Central Asia is an ideal open-air laboratory to understand the geodynamic processes related to a continental collision. Paleomagnetism has been widely used, as it is an excellent tool to constrain relative movements and rotations between the continental blocks constituting the Asian continent. A large set of available paleomagnetic studies have focused mainly on Cretaceous rocks, and have led to paleogeographic reconstructions prior to the indentation of India. However, a problem arises with Tertiary data from Central Asia, for which the paleomagnetic inclinations are systematically shallower than those deduced from the Eurasian reference apparent polar wander path (APWP). In terms of intracontinental shortening, these anomalously shallow inclinations would require about twice the amount of shortening for the Cenozoic data as for the Cretaceous data. No geologic evidence supports this interpretation. Several hypotheses have been proposed to explain the discrepancy such as compaction-induced inclination shallowing, tilted axial dipole, non-dipolar geomagnetic field geometry, tectonic shortening, and/or an inadequate APWP for eastern Eurasia (Siberia). Cogné et al. (1999) proposed that the discrepancy might be due to a non-rigid behaviour of the Eurasian plate during the Tertiary (between 100 and 50 Ma). In order to decipher this problem we present new paleomagnetic results obtained from 34 sites (282 cores) from Tertiary (47Ma) volcanic edifices (cones, necks, flows) that we sampled during a field trip in the summer of 2004 around the Arts Bogd Range (44.3°N, 102.2°E), Mongolia. These results should be critical in understanding

the low-inclination problem of Central Asia.