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First Paleomagnetic Constraints on the Latitudinal Displacement of the West Burma Block

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A b s t r a c t

Cenozoic collision between India and Eurasia produced the Himalayan-Tibetan orogen, which is commonly considered as the archetypical orogen for continent-continent collision systems. However, there is still no consensus on the amount and mechanism of post-collisional convergence, as well as on the roles of the numerous tectonic terranes comprising the orogen (Jagoutz *et al*. 2015, 2016; Replumaz *et al.* 2013, Royden *et al*. 2008, van Hinsbergen *et al.* 2011). The West Burma block exhibits a unique geodynamic evolution within this system, influenced by oblique subduction of the Indian plate and significant strike-slip motions along the dextral Sagaing Fault. Furthermore, it is at a key location for paleoenvironmental reconstructions (Cai *et al.* 2016, Licht *et al.* 2013). Despite this, robust paleomagnetic data from the West Burma block is largely absent.

Here we report new paleomagnetic, petrological and U-Pb age data to constrain the latitudinal displacement of West Burma. To this end, 45 sites were drilled in the intrusives, extrusives and sediments of the Wuntho arc, Myanmar. Paleomagnetic results were obtained

at 30 sites. In addition, 135 paleomagnetic results were obtained from a Late-Eocene monoclinic sedimentary section in the Chindwin basin, Myanmar.

Wuntho arc U-Pb ages cluster in the range 110–90 Ma, indicating a Late-Cretaceous age. Paleomagnetic results from this area show declination values of around 50°–100°, implying clockwise rotation of the overall arc dispersed by local-block rotations related to faulting, and inclination values close to zero, corresponding to near-equatorial paleolatitude. Tilt corrections are not available for sites in intrusive rocks. However, the sampling is distributed over a large area (1000 km^2) and the results are found inconsistent with regional tilting of the arc. The occurrence of remagnetization after tilting of the country rocks in several sites by the intrusive batholith also support the clockwise rotations and the low paleolatitude. In the Late-Eocene sediments, normal and reverse polarity magnetizations, alongside the occurrence of numerous ~10 cm thick siderite-rich layers with stable magnetizations, indicate a primary detrital or a very early diagenetic origin for the acquisition of the magnetization. The sediments constrain a low inclination after tilt correction, which is coherent with the inferred near-equatorial position from the older Wuntho arc rocks. Based on these results, we suggest that accretion of the West Burma block occurred at near-equatorial latitude, and that it subsequently underwent significant clockwise rotation and northward translation during the Cenozoic.

Keywords: paleomagnetism, plate tectonics, Wuntho arc, West Burma block, Himalayan-Tibetan orogen.

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