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Opposite block rotation in westernmost Yunnan at present and during the last 5 Ma?

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One of the key issues for models of the formation of the Tibetan Plateau and the Himalayan mountain range is to explain crustal movements around the eastern Himalayan Syntaxis (EHS) that marks the eastern edge of the Indian plate indentor. Controversial debates consider the classic escape model that calls for large-scale displacement of lithospheric blocks and newer models which involve crustal flow, with a combination of topographic loading and Poiseuille-type channel flow driven by long-term monsoon-dependent high erosion and gravitational potential energy of the Tibetan Plateau. Western Yunnan is a key area to trace crustal flow around the EHS and to decipher its mechanism. Present-day surface movements indicated by GPS velocities show a clockwise movement around the EHS continuing south to $\sim$26°N in Yunnan, where the movement is partitioned into western direction (western Yunnan and Burma) and a southeastern direction (south of the Sichuan basin). Paleomagnetic data from the region confirm a long-term clockwise rotation probably accumulated after the India-Asia collision. In our study we present new paleomagnetic data from late Miocene (since $\sim$5.5 Ma) to sub-recent ($\sim$10 ka) volcanic rocks from the Tengchong volcanic field in westernmost Yunnan (around 24°40'N/98°25'E) in order to detect young block rotation effects. Results from rock magnetic studies and reflected-light microscopy identify magnetite as the main magnetic remanence carrier in nearly all samples partly co-existing with Ti-rich titanomagnetite and hematite in different proportions. This magnetic mineralogy indicates highly variable degrees of alteration. Alternating Field demagnetization reveals well grouping remanence directions. The distribution of the site mean directions indicate a tendency of counterclockwise block rotation which is contrasting the recent clockwise rotation seen in GPS (expected to accumulate to $\sim$10° clockwise since ca. 5 Ma based on the present-day rotation rate).