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Neogene block-rotation in Central Iran: evidence from paleomagnetic data

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Paleomagnetic results from sedimentary units in Central Iran are presented and used to reconstruct the history of tectonic deformation of this region since the Neogene. Paleomagnetic data show that in Central Iran different crustal blocks bounded by sets of strike-slip faults are rotated in opposite directions to accommodate NNE–SSW shortening related to Arabia-Eurasia convergence. Large rotations of 20°–35° counterclockwise (CCW) have been measured in the Tabas and Yazd blocks, south of the Great-Kavir fault, characterized by the presence of N–S to NNW–SSE right-lateral strike-slip faults. Conversely, minor amounts of clockwise (CW) rotations have been measured in the Great-Kavir and Torud areas, where ENE–WSW left-lateral strike-slip faults have been recognized. Some of these faults have been active during the Quaternary up to present-day, suggesting that blocks-rotation is still occurring in Central Iran. We propose a block-rotation model in which a significant amount of shortening has been accommodated in Central Iran by means of vertical axis rotations, associated on strike-slip faults activity.