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Evolving partitioning of oblique convergence between Arabia/Eurasia in the northwestern Zagros (Iran)

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Continental collision between Arabia and Eurasia since the Miocene resulted in the formation of the NW-trending Zagros fold-and-thrust belt. The northwestern Zagros undergoes active, high-angle right-oblique plate convergence (45˚). This domain is affected by NW-trending faults and folds. At the rear of the belt, the right-lateral strike-slip Main Recent Fault (MRF) accommodates a part of the oblique convergence. South of this fault, major NW-trending thrusts such as the High Zagros Fault (HZF) or the Main Frontal Fault (MFF) accommodate a part of the orogen-normal shortening. The aim of this study is to estimate the degree of partitioning in the western Zagros accommodated by the NW-trending faults since the Miocene. We focus our structural and kinematic analyses on the MRF. Analyses of geomorphic features offset and cosmogenic dating determine the horizontal slip rate for the MRF between 4.9 and 7.6 mm/yr. We compare the results with GPS measurements and focal mechanism analyses. This comparison points to temporal and spatial changes of partitioning. Between the Miocene and the Early Pliocene, convergence was accommodated through a c.a. $\approx$ 50-km-wide transpressionnal thrust belt. In the Early Pliocene, the orogen-parallel component of convergence became localised along the MRF. Geologicaly-derived slip rate on the MRF over the Late Quaternary, once compared to the instantaneous convergence rate, suggests complete partitioning along the MRF. However, GPS survey in the Northern Zagros indicates partial partitioning of the convergence by transpressionnal deformation throughout the folds and thrusts of the belt [Walpersdorf et al.,

2006]. This discrepancy may point to a recent change in the mode of partitioning of oblique convergence in this part of the Arabian-Eurasia collision zone.