



Accommodation of oblique collision in the western Zagros (Iran): geometry and kinematics of the Main Recent Fault

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The NW-trending Zagros fold-and-thrust belt has been building up since the Miocene as a result of the collision between Arabia and Eurasia. According to GPS measurements, the 10°E-trending convergence vector is normal to the belt in the southeastern Zagros domain and oblique (45°) in the northwestern Zagros. Our study focuses on a major NW-trending, dextral strike-slip fault, the Main Recent fault (MRF), about 800 km long, which follows the northern boundary of the Arabian plate at the backstop of the northwestern Zagros. The analysis of satellite images, geological and topographical maps and slickensides measurements along the MRF allows to infer its kinematics and tectonic significance within the Zagros evolution. Between the Miocene and the Lower Pliocene, Arabia-Eurasia oblique convergence was accommodated through a 50-km-wide belt of thrust sheets. In the Early Pliocene, the lateral component of convergence became localised along the MRF strike-slip fault. In the Dorud region, the MRF is characterized by a single segment that offsets thrust sheets, whilst the fault splays southeastward into two segments reactivating reverse faults right-laterally. We precisely mapped right-lateral offsets of Quaternary geomorphic features such as river drainages, alluvial fans and terraces along the MRF with offsets ranging between 70 and 1400 m. To constrain the slip-rate of the MRF, limestone cobbles were sampled on those features. Concentrations of chlorine 36 and stable chlorine in the samples were determined by accelerator mass spectrometry at CAMS. Preliminary results suggest an average slip-rate of about 7 mm/yr, over the last 200 Ka. This rate is higher than the GPS-predicted NW strike-slip rate of about 3 mm/yr (Vernant et al. 2004,

GJI 157 pp.381-398), but lower than the 10-17 mm/yr determined from long-term geomorphic offsets (Talebian and Jackson. 2004, GJI 156 pp.506-526; Bachmanov et al, 2004, Tectonophysics 380 pp. 221-241). Our results suggest that the MRF accommodates a major part of the oblique convergence at the rear of the northwestern Zagros fold-and-thrust belt.

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