



Large-scale crustal deformation in Iran inferred from GPS measurements

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A network of 26 GPS sites was implemented in Iran and Northern Oman to measure displacements in this part of the Arabia-Eurasia collision zone. We present the GPS velocity field obtained from three surveys performed in September 1999, October 2001 and 2005 and the deduced strain tensor. This study refines previous studies inferred from only the two first surveys (Nilforoushan et al., 2003; Vernant et al., 2004; Masson et al., 2005). Improvements are significant in NE Iran where a first precise determination of the velocities is provided within the Kopet-Dag and along the Ashkabad strike-slip right-lateral fault. Along this fault, the movement decreases from west (3.4 mm/yr) to east (1 mm/yr), as expected from the seismicity which is dense only west of and along the Baghan-Germab fault. This result is partly based on the first determination of the velocity of the permanent GPS station of Mashhad. The main direction of the strain tensor appears very homogeneous from the Zagros to the Alborz and the Kopet-Dag (N20) and in eastern Iran (Makran and Lut block: N30). Only NW Iran suffers a variable strain pattern which seems to wrap the Caspian basin. The strain tensor map underlines the existence of large homogeneous tectonic provinces in term of style and amplitude of the deformation.