



A new present-day velocity field for eastern Iran

A. Walpersdorf (1), F. Tavakoli (1,2), D. Hatzfeld (1), A. Jadidi (1), M. Vergnolle (1), Y. Djamour (2), H.R. Nankali (2), M. Sedighi (2), O. Bellier (3), and E. Shabanian (3)

(1) LGIT, Université Joseph Fourier, CNRS, Grenoble, France (andrea.walpersdorf@ujf-grenoble.fr, +33 4 76635252), (2) National Cartographic Center, Geodetic Department, Tehran, Iran, (3) CEREGE, Université Paul Cézanne Aix-Marseille III, CNRS, Aix-en-Provence, France

Since 2004, extensive GPS campaigns and the upcoming Iranian permanent GPS network are monitoring the present-day deformation in eastern Iran. We present a new GPS velocity field that extends from Central Iran to the Turkmen shield and the Hellmand block on the Eurasian plate. It permits to monitor the right lateral shear across the aseismic Lut block between Central Iran and the Hellmand block, and the resulting shortening across the Kopeh Dagh mountain belt limiting NE Iran towards Turkmenistan. The present-day deformation pattern is used to verify existing tectonic models. Individual instantaneous fault slip rates are compared to short term and long term geological estimates. We find that GPS slip rates are generally coherent with short term geologic determinations (from dating of geomorphologic offsets over some 10-100 ka). Some differences with respect to long term estimates (from total geologic fault offsets and onset ages of several Ma) indicate non-constant slip rates over different time scales or that the onset of the present-day deformation presumed to 3-7 Ma in eastern Iran has to be revised.