



New insights for the Tabriz fault (NW Iran) from GPS profiles measurements

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The Tabriz region (NW of Iran) is located East of the North Anatolian Fault (NAF) and West of the relatively aseismic South Caspian basin. To the North, The Caucasus is supposed to accommodate 8 +/- 1 mm/yr of NNE/SSW shortening. The rigid block of Central Iran limits the zone to the South. The region is crossed by large WNW-ESE faults, known for major $M > 6.5$ earthquakes with an average recurrence time of 250 years. Large scale velocity field from GPS measurements suggested about 8mm/yr of right-lateral displacement for the faults in the region. In a recent study, we presented the analysis of the measurements of a dense GPS network installed in NW Iran in 2002. Those results showed that most of the 8 mm/yr right-lateral motion is accommodated by the Tabriz fault. This fault is known as the major active fault of the NW Iran. It has an average strike of $N120^\circ$ over a length of about 150 km. This fault generated two large earthquakes in 1721 ($M=7.3$) and 1780 ($M=7.4$) that strongly damaged the city of Tabriz (1.2 million people). It did not generate any earthquake for 200 years. In order to study the seismic cycle of this fault, two GPS profiles were installed normal to the fault in 2004. Each profile is about 80 km long and comprises 8 sites. Here, we present results obtained after 2 years and 3 campaigns of measurements. Implications for the deep structure of the Tabriz fault are also proposed.