



First results inferred from the new Iranian Permanent GPS Network for Geodynamics (IPGN)

Y. Djamour (1), H. R. Nankali (1), M. Sedighi (1), F. Sadeghi (1), Z. Rahimi (1), Z. Mousavi (1), F. Khorrami (1), A. Aghamohammadi (1), S. Hosseini (1)

(1) Geodetic and Surveying Dept., National Cartographic Center, Tehran, Iran
(y-djamour@ncc.neda.net.ir / Fax: +98 21 66001972 / Phone: +98 21 66001090)

Iran is one of the most tectonically active zone in Alpine-Himalayan seismic belt where has been shaken by largely destroying historical and instrumental earthquakes. Iran is located in the convergence zone between Arabia and Eurasia with a velocity of 22 mm/yr nearly to the North (Nilforoushan et al, 2003; Vernant et al., 2004). The shortening between Arabian and Eurasian plates in Iran is mainly distributed on Zagros and Alborz belts.

Despite the historical and scientific awareness of seismic hazard in Iran, unfortunately this country lacked a Continuous GPS network to study geodynamic and tectonic movements. Such geodetic measurement can play an important role to understand the tectonic deformation then to evaluate the seismic hazard on Iran. Since early 2005 National Cartographic Center of Iran (NCC) is establishing a continuous GPS network of >100 stations named *Iranian Permanent GPS Network for Geodynamics (IPGN)*. In this paper we try to present the preliminary results obtained from the network.

Taking into account the number of provided GPS receivers, i.e. >100 receivers, we made a priority based on two factors of seismicity and population. At the first, in order to study general tectonic behavior in Iran 41 stations, globally distributed in whole of Iran, were been considered. Three other areas in the priority list were: Central Alborz and Tehran, North-West of Iran (Azerbaijan) and North-East of Iran (Khorasan). The rest of receivers, i.e. ~60, were considered for these areas as local networks. These four networks are daily processed and give us a continuous monitoring of any surface deformation.

Several GPS campaigns were carried out on different networks between 2000 and

2005 and provided the horizontal velocity field in Iran. In this work, for the first time a continuous GPS network is used to better understand the tectonic deformation and to compare with the campaigns results. Thank to continuous GPS data, not only we can quantify shortening and strike-slip rate in Iran as horizontal movements, but also we can talk about subsidence and uplift as vertical movements.