



GPS baseline length changes and their tectonic interpretation in the Pannonian Basin

Gy. Grenerczy (1,2), G. Bada (3,4)

(1) Department of Geology, Southern Illinois University, Carbondale, IL, USA, (2) FOMI, Satellite Geodetic Observatory, Budapest, Hungary, (3) Netherlands Research Center For Integrated Solid Earth Science, Vrije Universiteit, Amsterdam, The Netherlands (4) Department of Geophysics, Eotvos University, Budapest, Hungary (grenerczy@sgo.fomi.hu, Fax: +36 27 374 982)

In the frame of the EU CERGOP-2/ENVIRONMENT WP 10.3 we studied the changes of distances between several GPS station pairs across the Pannonian Basin. The baseline length variation analysis was based on the episodic data of the Hungarian GPS Geodynamic Reference Network between 1991 and 2003 and aimed at quantifying the present-day deformation of the basin. The analysis of the time series of baseline lengths is a simple one-dimensional determination of strain rates but it is mostly independent of reference systems and enables us the identification of problematic data as well as the tectonic signal. This analysis together with our dense regional GPS velocity and strain rate data compared with focal mechanism solutions, stress, and seismicity data are used to constrain the crustal motions in and around the Pannonian Basin with special emphasis on the two major structural units of the basin, the ALCAPA and the TISZA blocks and their diffuse boundary, the Mid-Hungarian Shear Zone. The present kinematics, rigidity, inner deformation, independence, and unity of the two major blocks, fault kinematics and strain distribution along the major fault systems are investigated.