



Local geodynamic velocities by GPS and 3D model of the terrain deformation in Tuzla

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Tuzla is very well known after its salt mine Tusanj. The salts has been exploiting there since the Roman time. After the year 1880 the exploitation begins more intensive. After 1950 local geodetic network were established in the town and surroundings: triangulation, transverses, detailed geodetic profiles and leveling. So, the program of the geodetics works started to be implemented yearly, after 1956. The accuracy of 10-20 mm achieved for horizontal positions, and 1mm/km for leveling. The accuracies were more than enough good, because the velocities appeared to be very big.

Geodetic data were collected over 50 year. Now, the data set is appropriate to present adequately, the very serious deformation and the local geodynamics. It is good enough to describe terrain deformations behavior precisely.

The Nord part of the town despaired totally. The biggest vertical velocities in the center of the terrain deformation are big as much as about 10 m, but horizontal velocities are about 5 m. The problem is especially difficult for maintaining the town utilities, as well as for organizing normal life for citizens. During the summer of 2007, the triangulation network was observed by GPS.

Resulting coordinates and the velocities were determinate. Local geodynamic problem is presented graphically. The maps of the vertical and the horizontal velocities are presented for the different epoch of measuring. Also, interesting 3D model of the terrain deformation for the different epoch and series of data is present in this paper.