



Determination of recent movements of lithosphere in regions with chemogenic sediments on the surface in the Dinarides region

Almin Dapo, Bosko Pribicevic, and Lidija Spiranec
University of Zagreb, Zagreb, Croatia (adapo@geof.hr)

In the area of carbonate or karst Dinarides, besides the dominant carbonate rocks and subordinate clastics, in more places more significant mass of chemogenic sediments can be found, represented by gypsum and anhydrite. As chemogenic sediments are specifically lighter than overlying rocks, they were, during the long geological history, trying to achieve isostatic equilibrium, or get out on the ground surface. In recent times, in areas with chemogenic sediments, a larger tectonic activity is noted than in the wider environment. This is certainly reflected in increased vertical and tangential displacements along major faults in relation to the surrounding area, which are built mainly of carbonate deposits. Determining the amount of movement of diapiric bodies, as absolute and relative, using the most modern surveying methods, precisely would assist the understanding of the tectonic movements and recent structural relations in a wider area.

Since the structures caused by diapiric and salt tectonics play an important role in the development of oil and gas reservoirs, such a precise research could be used to estimate hydrocarbon saturation in a regional sense.

Our goal is to create a movement model of chemogenic sediments, through four GPS surveying campaigns during 2 year period. The initial GPS campaign was completed this winter. Four sets of geodetic points have been stabilized in the area of interest, each set consisting of one point in the chemogenic sediments and second one in the rocks. The points have special stabilization that allows precise centering of the GPS antenna above the point with maximum accuracy.

Processing of GPS measurements was carried out in a scientific software with multipoint solutions GAMIT / GLOBK. It is a comprehensive suite of programs for analyzing GPS measurements primarily to study crustal deformation.

The paper presents the theoretical basis of the project, performed activities, and first results.