



Active folded structures of the Western Caucasus (Sochi region)

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The Western Caucasus as a margin segment of folded system of the Greater Caucasus was formed at the periphery of collision interaction of the Scythian Plate and the Transcaucasian Massif. The estimated age of the primary folded deformations of the initial surface of that territory ranges from the late Eocene to late Neogene. We have obtained new data on modern folded deformations of the anticlinal ridges, which prevail in Sochi region in the southern macroslope of the mountain system.

Very similar Alek, Galitsinsky, Akhun, Nikolaevsky anticlinal ridges are uplifting in the main Caucasus direction (NW – SE) and are crossed by narrow antecedent river valleys. These ridges stand out contrasting to sinclinal depressions, where fluvial accumulation prevails. At the intersection of the Mzymta river and the Galitsinsky anticlinal ridge a narrow Akhshtyr canyon with steep, 150 meters high slopes were formed. Downstream in the neighboring Akhshtyr synclinal depression the valley expands. Here the floodplain and two levels of terraces with the height of 20 – 30 and 50 – 60 m correspondingly were formed. The age of the first terrace was defined by archeologic data of V. Shchelinsky (2007) and by correlation with marine Black Sea Late Karangat terrace as a 135 – 90 ka (Eemian interglacial). The second terrace is apparently older and dates back to Middle Pleistocene. The field research and analysis of the elevations by ASTER GDEM allowed us to trace both terraces in the southern structural slope of the Galitsinsky ridge above the canyon, adjacent to the Akhshtyr depression, at the heights 70 and 110 m correspondingly. Alluvial deposits in outcrops of lower terrace (elongated pebbles, which look like modern alluvium of the Mzymta) were traced on the surface of the slope.

Thereby, described fragments of the Mzymta terraces were uplifted above the level of the corresponding terraces in the synclinal depression as a result of dislocation on the slope of the actively uplifting anticlinal Galitsinsky Ridge. The axial zone of the ridge hosts the famous Paleolithic site of the Akhshtyr Cave. Its infilling deposits span the time interval from 112 ka to Recent. According to the archeological data, this habitat was earlier much closer to the river level and provided a direct access to water. At present the cave is located directly under the steep wall of the Akhshtyr canyon on the shelf of 110 m high erosion terrace (a fragment of the second terrace).

Thus Sochi region of Western Caucasus demonstrates the active formation of folded relief of the anticlinal ridges and synclinal depressions. Considering the age and the modern height of the terraces we can evaluate relative uplift velocity of the Galitsinsky Ridge as 0,5 – 0,6 mm per year, and the minimum evaluation of the folding deformation of 50 m during the last ca. 100 ka. The active uplift of the folded structures with the main Caucasus direction indicates domination of lateral contraction with SW – NE direction.