

Estimation of the Eastern Caucasus (NE Azerbaijan) uplift based on the Neogene-Quaternary marine deposits study

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Abstract

The Lateral Range of the Eastern Caucasus is one of the highest ridges of the mountain system of the Greater Caucasus. Its neotectonic deformation influences the adjacent homoclinal Gusar plateau, which smoothly rises towards the ridge from the Caspian coastal zone. The plateau is composed of marine and continental sediments of Pont-Apsheronian age, which lie in transgressive unconformity with the pre-Pliocene folded basement. The studied Akchagylian formation is represented by gray clays, silts and sands with traces of wave-formed ripples, sandstones and shell limestones. These deposits are covered by clays, silts and pebbles of the Gusar Unit of Apsheronian age, where limestone interbeds with *Apscheronia propinqua* are described (Geological Map, 1960). The described signs indicate the marine or coastal genesis of the sediments that form the plateau.

From the north the Lateral Range of the Eastern Caucasus is adjacent to the Gusar Plateau. We have investigated the synclinal plateau-like Chereke massif (2383 m), made of similar sediments, and drawn in this way into the folded deformations. The lower part of the Chereke section is represented by silts and siltstones, sands, sandstones with traces of wave-formed ripples. The upper part is formed by pebble-boulder conglomerates, calcareous sandstones with traces of wave-formed ripples, shell detritus with whole shells of gastropods and bivalve molluscs of the family Mactridae. The listed signs indicate the marine genesis of these deposits. According to V.E. Khain the lower section of Chereke has Maikopian age and the tops belong to the Sarmatian, but according to the data of T.N. Kangarli sediments have Cimmerian (Productive formation) and Akchagylian age respectively.

The uplift of the Gusar plateau was caused by total uplift of the mountain building. The top of Akchagylian marine deposits is situated at the height of 1600 – 1700 m a.s.l., and they are covered by Apsheronian deposits with 1906 m maximum height (Mt. Big. Suval). Thus, taking into account the rise of the sea level in Apsheronian time, the amplitude of deformations of the Gusar plateau can be estimated at 1500 m for the period after the end of Apsheronian sedimentation (about 1 Ma). The rate of uplifting of the plateau, based on these data, is 1.5 mm per year and correlate with the rates of uplift of the Shirak depression of the Armenian Highland (1.3 – 1.8 mm per year; Trifonov et al., 2017).

In the future comparative analysis of the Gusar Plateau deposits (Mt. Big. Suval) with the Lateral Range (Chereke massif) deposits will allow to confirm or deny their similar genesis and age and calculate the rates of the uplift of the latter.

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