

Tectonic along a transect in the Northern Greater Caucasus in Russia

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The general objective of this project was to understand the tectonic evolution of the northern part of the Greater Caucasus mountain range from the Mesozoic palaeotectonic stages to the late Tertiary to present development of the orogen. The studied area is located to the North of the Greater Caucasus including the territory of Stavropol High to the North and the slopes of Mount Elbrus to the South. We present structural cross-sections of the central Northern Greater Caucasus and its foreland based on field work and data, collected earlier by the collaborators of Kavkazgeolsiomka in Essentuki. We describe the palaeotectonic evolution based on a regional subsidence analyses and data from stratigraphy.

Our regional subsidence analysis is integrated with our regional structural cross-sections. We present a structural reconstruction of the palaeotectonic setting of the northern margin of the Greater Caucasus Basin and the adjacent broader rift-shoulder area at the Scythian plate. In the presented subsidence curves, constructed according of data of wells, we can discriminate three main periods of evolution for this region: 1 - Late Triassic-Early Jurassic thermal subsidence, 2 - Several subsidence and uplift events in Late Cretaceous - Middle Eocene, and 3 – Middle Eocene to present continuous flexural subsidence.

The work also includes the description of the different tectonic units and types of deformation in the combination of field observation and literature descriptions. This work is the continuation of the work of Jeremiah Mauvilly, which concerned the North Caucasus, near the Military Road, further in the east.

Analysing of the structural data north to the Main Range of thrusts and faults, we came to the insight that in the Foreland Basin changed in the orientation of extension and compression, as well it changed to the strike-slip regime during the last collision phase. Also, we suggest the presence of the stepped shape structural “Transitional Zone”, which includes the Stavropol High, the Chegem uplift and the southern part of the Terek Basin.

In summary, the development of the fold-and-thrust belt of the Greater Caucasus and its Northern flank is strongly dependent on the pre-collisional palaeotectonic structural heritage and local variations. The latest stage of development is the Alpine orogeny, which started in Late Eocene and continues nowadays, reflecting its development in the foreland basins.

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