



Main features of geological structure and a new tectonic map of Georgia

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The territory of Georgia is a component of the Caucasian segment of the Mediterranean (Alpine-Himalayan) collisional orogenic belt. The Greater Caucasian, Black Sea-Central Transcaucasian, Baiburt-Sevanian and Iran Afghanian accretionary terranes (island arcs or microcontinents in geological past), separated by ophiolite sutures of different age, are identified within the Caucasus area. Georgia covers the S part of the Greater Caucasian terrane, the Black Sea – Central Transcaucasian terrane and the N part of the Baiburt-Sevanian terrane. In addition we can find in many places of the Caucasus ophiolite terranes – relics of Proto-Paleo- and Neo-tetethys oceanic basins, which have been obducted from above mentioned ophiolite sutures.

The territory of Georgia is built up of Neoproterozoic-Paleozoic metamorphic complexes (migmatites, gneisses, granite-gneisses, metabasites, metaophiolites) of supra-subduction zones, Mesozoic-Cenozoic sedimentary, submarine and subaerial volcanic rocks and intrusives of various ages and composition. These rocks exhibit quite different character within the separate terranes and subterrane (tectonic zones) of Georgia. The Earth's crust of Georgia thus contains tectonic structures of different age, type, scale and genesis. Complex tectonic nappes can be found, both, in the pre-Alpine crystalline basement and in the Mesozoic-Cenozoic sedimentary cover. Late Alpine southward-directed nappes are well documented on the southern slopes of the Greater Caucasus. They formed as a result of northward advance and underthrusting (continental collision – due to closing of rifted Greater Caucasus basin and underplating possible initiation of subduction) of the Transcaucasian massifs beneath the Greater Caucasian folded system, mainly during the pre-Late Pliocene time (Rodanian phase) but continuing to develop into present time.

On the basis of the latest geological and geophysical data a new tectonic map of Georgia in scale 1: 500 000m was drawn. The map has a complex character and contains a wide spectrum of data on structure and development of the Earth's crust of the Georgian territory, composition, attitude and geodynamic types of sedimentary and magmatic rocks. In addition tectonic deformation of rocks and the history of their formation, different tectonic structures (faults and folds), their age and kinematic nature, and the deep structure of the Earth's crust is shown by means of the structure contours of different geological horizons, geodynamic conditions of the Caucasus in Mesozoic and Early Cenozoic time, character (direction and velocity) of horizontal movements and stress conditions of the Earth's crust in the territory of Georgia at the neotectonic, stage are pictured on the map.