



Active tectonics of the Kumisi-Tsalka area, Georgia: back-thrust zone of the eastern Achara-Trialeti fold and thrust belt

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It is well known that using surface geological data alone real depth image and structural style of deformation can not be obtained. The main idea and novelty of the research is constructing 2D and 3D structural models, defining geometry of active thrusts, assessing seismic hazard and risk by means of fault-related folding theory. The goal of the research is to study deep structure of object of investigation, determine the structural style of its deformations and construct 2D and 3D structural models; distinguish potential active fault (thrust) systems and evaluate seismic hazard and risk on basis of 3D structural models. The study object is Kumisi-Tsalka area including back-thrust zone of the eastern Achara-Trialeti fold and thrust belt. The surface area of the study territory is mainly built of Cretaceous, Paleogene, Neogene and Quaternary sediments and Miocene-Quaternary volcanic. The study object was selected mainly due to the fact that significant seismic, exploration and structural boring works have been carried out in the study territory. It is impossible to construct real structural models without above mentioned data. The research goal required solving the following tasks: (1) structural interpretation of seismic profiles; (2) constructing serial structural cross-sections on the basis of surface geological, borehole data and the interpretation of seismic profiles; (3) constructing a 3D structural model by means of serial balanced cross-sections; (4) distinguishing active structures (blind thrusts, structural wedges, etc.) according to the data of 3D structural models and earthquakes (historical and instrumental). Seismic profile interpretation was done and balanced cross-sections and 2D and 3D structural models were constructed by means of 2-3 D Move software, focal mechanisms were provided by LANDER FA2002 software and frequency sensitive moment tensor inversion technique (Barth et al., 2007).