TECTONIC MODEL OF THE GEORGIAN PART OF LESSER CAUCASUS OROGEN USING SEISMIC PROFILE

***Alania V., *Enukidze O., **Razmadze A.**

**M. Nodia Institute of Geophysics, I. Javakhishvili Tbilisi State University, Tbilisi, Georgia*
***A. Janelidze Geological Institute, I. Javakhishvili Tbilisi State University, Tbilisi, Georgia*

Abstract. *The Lesser Caucasus double wedge orogen accommodates the crustal shortening due to the far-field effects of the collision between the Arabian and Eurasian plates [1-4]. Subsequent convergence of the Arabian and Eurasian plates during the late Alpine time caused extensive intracontinental deformation in the Lesser Caucasus. The sedimentary cover of the LC retro-wedge is commonly > 7 km thick. It is predominantly composed of shallow and deep marine rocks and is divided by pre- and syn-orogenic sequences [5]. Pre-orogenic sequences consist of Paleozoic and Jurassic- late Eocene shallow and deep marine rocks strata. The Paleozoic rocks of the Khrami massif are made up mainly of late Paleozoic (Variscan) granites and early Paleozoic gneisses, diorites, and tonalites [6]. The low-temperature thermochronologic evolution of the Achara-Trialeti back-arc basin during the Neogene refers to Miocene cooling [3, 4]. Here we show a new tectonic model for the Georgian part of the Lesser Caucasus orogen by integrating field observations and interpreted seismic data. The seismic profile reveals the presence of the Khrami basement thrust sheet, crustal-scale duplex, fault-related folds, triangle zones, passive-roof duplex, and passive-roof and passive back thrusts. Dominant structural styles of the compressional structures are related to multiple detachments. The structural inversion is complicated by the interaction between several detachments from the mid-crustal detachment to the upper-most detachment along the late Eocene shales. According to the seismic profile, the crustal-scale duplex was recognized under the basement thrust-sheet which propagates northward along the early Jurassic shale layers. Triangle zones are interpreted as simple and multiple fault-bend fold wedges models and are a good example of ramp-dominated triangle zones. Pliocene-Quaternary lava flows are involved in the compressional deformation and are related to an out-of-thrust sequence of the Khrami basement thrust- sheet.*

Keywords: *Lesser Caucasus; Seismic profile, Basement thrust-sheet, Crustal-scale duplex*

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