

Magnitude of Shortening in the Western Kura fold-thrust belt, Georgia

Lasha Sukhishvili (1), Zurab Javakhishvili (1), Adam Forte (2), Giorgi Merebashvili (1), and Giorgi Boichenko (1)

(1) Institute of Earth Sciences & National Seismic Monitoring Centre, Ilia State University, Tbilisi, Georgia (lasha.sukhishvili@iliauni.edu.ge), (2) Department of Geology & Geophysics, Louisiana State University, Baton Rouge, LA, USA (aforte8@lsu.edu)

Previous works identified that the Kura fold-thrust belt (KFTB) represents the late Plio-Pleistocene locus of shortening within the central Arabia-Eurasia collision zone. While the deformation initiation time and shortening rates are well estimated in the eastern part of the belt, western section is still poorly studied. Based on regional stratigraphic relationships, it was suggested that deformation of the Georgian (Western) portion of the KFTB initiated before or during Akchagyl time (3.4-1.6 Ma). Bordered by 300-400 m a.s.l. elevations the Gombori Range represents the western extent of the KFTB and rises to elevations > 1900 m. The range contains exposures of deformed Pliocene to Quaternary fluvial sediments located at different elevations.

Our previous studies illustrated that the local relief, absolute elevations and catchment-mean ksn values are higher in the western part of the Gombori Range (under the same climate settings). By making some additional quantitative geomorphologic calculations, line for balanced cross section was selected. On the basis of field mapping and existing 1:100000 and 1:200000 geological maps balanced cross section has been constructed to estimate shortening rate at this part of the KFTB. The lowest and the highest terrain of the cross section, represented by fluvial sediments, has been dated by 10be absolute dating technique.

Understanding the deformation processes in this region is essential for seismic hazard assessment for the nearby urban centers - Telavi and capital Tbilisi. The strongest recorded earthquake was Mw=5.3 in 1997, but there are some evidences of stronger historical events as well.