Structure of the Gare Kakheti foothills using seismic reflection profiles: implications for kinematic evolution of the Georgian part of Kura foreland fold-and-thrust belt

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Gare Kakheti foothills are located between Lesser Caucasus and Kakheti Ridge and are mainly represented by the series of NNE dipping thrust faults, most of which are associated with fault-related folds. Gare Kakheti foothills as a part of the Kura foreland fold-and-thrust belt developed formerly as a foreland basin (Oligocene-Lower Miocene) (e.g., Alania et al., 2017). Neogene shallow marine and continental sediments in the Gare Kakheti foothills keep the record on the stratigraphy and structural evolution of the study area during the compressive deformation. Interpreted seismic profiles and structural cross-sections across the Udabno, Tsitsmatiani, and Berebisseri synclines show that they are thrust-top basins. Seismic reflection data reveal the presence of growth fault-propagation folds and some structural wedges (or duplex). The evolution of the Udabno, Tsitsmatiani, and Berebisseri basins is compared with simple models of thrust-top basins whose development is controlled by the kinematics of competing for growth anticlines. Growth anticlines are mainly represented by fault-propagation folds. The geometry of growth strata in associated footwall synclines and the sedimentary infill of thrust-top basins provide information on the thrusting activity in terms of location, geometry, and age.

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