

The Greater Caucasus: a new tectonic map!

Jon Mosar (1), Jérémiah Mauvilly (1), Nikolay Enna (2), Irakli Gamkrelidze (3), Talat Kangarli (4), Kakhber Koiava (3), Tofiq Rashidov (4), and Vladimir Lavrishev (2)

(1) University of Fribourg, Earth Sciences, Department of Geosciences, Fribourg, Switzerland (jon.mosar@unifr.ch), (2) Kavkazgeolsyemka, Fed. state Unitary geological enterprise; 4A Sadoviy alley, 357600 Yessentuki, Russia, (3) A. Janelidze Institute of Geology of Tbilisi State University, 31 Politkovskaia str., 0186 Tbilisi, Georgia, (4) Institute of Geology & Geophysics, Azerbaijan Nat. Acad. of Sci., H. Javid av. 119, AZ-1143 Baku, Azerbaijan

The Greater Caucasus (GC) results from the rotational convergence of the Arabian and Eurasian plates. The orogen extends from the Black Sea in the W to the South Caspian Basin to the E. The Tertiary age orogen is the result of the inversion of a former rift basin developed on strongly extended continental crust. The GC forms a doubly vergent orogen with a dominant thrust direction top-to-the south. Both, to the N and the S the orogen exhibits active foreland-fold-and-thrust belts that propagate into their flexural foreland basins. Unlike the GC, extension in the Black Sea and South Caspian basins went beyond rifting to develop new ocean lithosphere, though at different periods. The orogen developed obliquely across the original rift basin/northern rift shoulder setting. Thus, structural domains in the GC, in the Black Sea, and in the South Caspian Sea reflect different former paleogeographic and synsedimentary settings of the southern, central, and northern Greater Caucasus Basin. The main present-day tectonic boundaries (thrusts, strike-slip faults) associated with the plate convergence and the mountain building processes develop along inherited structures.

The northern flanks of the Greater Caucasus are characterized by steep thrust faults, but also by a north-directed foreland fold-and-thrust belt in the East in Dagestan and large monocline with North-dipping strata in the central part grading into the Stavropol high.

The central part of the orogeny shows basement blocks and relict grabens with Mesozoic age sediments in the central and western parts linked to represent the rift shoulder, or the platform to basin transition. We also observe numerous occurrences of intrusives and extrusives related to the extreme thinning of the continental crust in the central part of the former rift basin. The southern slopes, in Russia, Georgia and Azerbaijan represent a succession of tectonic domains separated by major thrusts and showing fault-related folding. The dominant thrust is the Main Caucasus Thrust (MCT) separating the central GC from the southern slopes. In the center the MCT forms the boundary with Paleozoic basement.

The tectonic evolution and the different structural domains will be briefly presented in the light of new 2D palinspastic reconstructions, new tectonic profiles across the whole mountain range, and the new tectonic map will be presented.