



The Eastern Greater Caucasus – A repeatedly inverted passive margin

J. Mosar (1), T. Kangarli (2), Martin Bochud (1), Marie-Francoise Brunet (3), Stuart Egan (4), Nigel Mountney (4)

(1) Department of Geosciences-Earth Sciences, Fribourg, Switzerland (jon.mosar@unifr.ch), (2) Geology Institute of Azerbaijan, Baku, Azerbaijan, (3) Laboratoire de Tectonique, Université Pierre et Marie Curie, Paris, France, (4) School of Earth Sciences and Geography, Keele University, Keele, England

With Mount El'brus culminating at 5642 m.a.s.l. the Greater Caucasus is Europe's highest mountain range at the cross-road of Europe, Asia and Arabia. Its eastern termination, in Azerbaijan, plunges into the South Caspian Sea, one of the world's major oil provinces. Most of the sediments of found in the Greater Caucasus pertain to the meridional edge of the Scythian plate. The geodynamic setting corresponds to a continental margin (passive margin type) that has been inverted by collision between the Scythian plate and an agglomeration of island arc terranes to the South in the Lesser Caucasus. The tectonic features of the Eastern Great Caucasus are those of a doubly verging mountain-belt with two external fold-and-thrust belts. The pro-wedge (front) is located to the South and overrides the Kura Basin, whereas the retro-wedge (back) is located to the North and overrides the Terek Basin. The Great Caucasus has undergone continuous growth since beginning Tertiary (some 65 Ma) in phase with the tremendous subsidence of the South Caspian basin.

From field observation it is to date possible to document and/or conclude to several superposed episodes of erosion or/and of deformation. Events related to the formation of the orogenic wedge are: "Late" NNE-SSW and NNW-SSE cross faulting; Present (post-Quaternary) folding-thrusting; Pliocene (possibly) folding-faulting; post-Oligocene folding-thrusting; erosion (Eocene-Oligocene); Cretaceous-Tertiary folding-thrusting.

Events related to Cretaceous and Jurassic paleotectonics and attributed to successive

inversions/extensions of the margin are: Aptian (pre-Turonian) folding-thrusting; Aptian/Albian erosion; Valanginian to Barremian olistoliths and olistoplates; Berriasian conglomerates on tilted Kimmeridgian; Oxfordian erosion with conglomerates; Pre-Oxfordian folding (Mid.Cimmerian “tectonic phase”).

The various “tectonic phases” affecting the passive margin during the Mesozoic are thought to be related to far-field events caused by changes in the geodynamics of the subduction under the Lesser Caucasus arc system. Tentative correlation of the different events with plate tectonic models will be presented.