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Style and timing of the Meso-cenozoic deformations at the frontal part of the southern Greater Caucasus (Georgia): comparison between the western (Rioni basin domain) and eastern parts (Kura basin domain)

Zoé Candaux (1), Marc Sosson (1), Shota Adamia (2), Nino Sadradze (2), Onise Enukidze (2), Victor Alania (2), and Alexandre Chabukiani (2)

(1) UCA, CNRS, IRD, Observatoire de la Côte d'Azur, UMR Géoazur, Sophia Antipolis,France, (2) Javakhishvili State University, Institute of Geophysics, Tbilisi, Georgia

The subduction of the Tethys Ocean beneath Eurasian plate initiated the opening of the Greater Caucasus (GC) back-arc basin from Middle Jurassic to Upper Cretaceous (e.g. Adamia et al., 1981; Zonenshain and Le Pichon, 1986; Roberston et al., 1996; Stephenson and Schellart, 2010 among others) and the Black Sea (BS) during the late Early Cretaceous. The first evidence of collision are of Paleocene-Eocene ages in the Crimean Mountains (northwestern continuation of the GC) (Sheremet et al., 2016) and also in the western GC (Saintot and Angelier 2002). However, the age of the first compressionnal deformations and inversion in the southern GC (in Georgian area) is still a matter of debate: Late Eocene (Mosar et al., 2010; Vincent et al. 2016), Oligocene-Middle Miocene (e.g. Adamia et al. 2010) and Middle Miocene (Alania et al. 2009). Consequently, the main purpose of our studies was to constrain the timing, the localisation and also the style of deformations of the southern part of the GC in Georgia.

Based on literature and field observations (investigated in the frame of a PhD thesis) we document lateral variations in the stratigraphy and in the structural framework from northwest to southeast of the GC frontal part in Georgia. We bring new points in the Meso-cenozoic stratigraphy (regarding lithology, disconformities and unconformities, growth strata) of this part of the belt, from Rioni basin to Kura basin. These new data allow to identify and describe the pre, syn, and post tectonic deposits. Moreover, we illustrate with several cross-sections, the geometry, the style of deformation and the role of inherited structures. As an example, some thrusts or strike-slip faults are due to the reactivation of the normal faults pattern initiated during the Mesozoic GC and BS opening. Finally, we highlight the different tectonic stages in the different areas along the southern GC.