

The Uraveli sequence: implication for basin formation during the Middle-Upper Eocene, Achara-Trialeti basin, Georgia

T.Beridze, V.Alania, S. Khutsishvili, N.Popkhadze, & R.Chagelishvili

Geological Institute of Georgian Academy of Sciences, Tbilisi, Georgia

nino_popkhadze@yahoo.com , viktoralania@yahoo.com, sofiio_sofi@yahoo.com, ruso_chagelishvili@yahoo.com

Studies of modern back-arc basins demonstrate that the history of their formation and evolutions is reflected in the sedimentary fill of the basins, their structure, composition and texture of volcanic and volcano-clastic components. This history can be deciphered in ancient back-arc basin sequences.

The Achara-Trialeti fold and thrust belt is a major tectonic unit located in the eastern part of the Caucasus in Georgia. Eocene volcano-sedimentary sequences within Achara-Trialeti are folded and thrust-faulted as a result of a compressional-contractual tectonic regime during post-upper Eocene time. From Jurassic to Paleogene, the present Achara-Trialeti area was a back-arc basin, as a result of northward subduction of the Tethys Ocean under the Eurasian active margin. Sedimentary successions, and the composition and textures of volcanic and volcanoclastic components reflect a two-phase subsidence history (fault controlled and thermal) and are divided into syn-rift and transitional mega-sequences. The Lower-Middle Eocene sedimentary rocks consist of thin and thick bedded turbidities, pyroclastic flows and volcanoclastic turbidites, and they filled the basin during an extensional tectonic regime accompanied mostly by low K-tholeitic and calc-alkaline volcanic activity. The Upper Eocene sedimentary rocks are thin bedded turbidities, and filled the basin during a transitional regime accompanied by alkaline (shoshonites) volcanic activity.

Based on sedimentary, stratigraphic and structural analyses within the Akhaltsikhe basin (riv. Uraveli and Mtkvari), during the Middle-Upper Eocene, the Uraveli sequence consist of thin and thick bedded turbidities, volcanogenic turbidities and conglomerates separated from each other by syn-rift and transitional mega-sequences. Formation of this sequence is attributed to a transpressional-extensional tectonic regime. During Late Middle-Early Upper Eocene, there was a deepening along northern normal faults, related to half-graben structures, which resulted in the formation of asymmetrically shaped depocenters. Such kind of tectono-sedimentation is common for pull-apart type basins.