Geophysical Research Abstracts, Vol. 7, 06629, 2005
SRef-ID: 1607-7962/gra/EGU05-A-06629

Sedimentary Evolution of Lower Kliwa Sandstone Member from southern part of Eastern Carpathians (Romania) using sequence and diagenetic studies

M. L. Nutu

Institute of Geodynamic of Romanian Academy, Bucharest, Romania (lmnutzu@geodin.ro / Fax: +4021 2100604

The evolution of Eastern Carpathians thin skinned thrust belt is characterised by the deposition of a turbidic system, with particularly remarkable facies constancy along strike during the Paleogene-Lower Miocene. These sediments were deposited on the eastern passive continental margin of the Outer Dacidian Trough, a mobile continental domain situated between the Median Dacides (or Rhodopian fragment) in the west and the European platform-type of units in the east. The Lower Cretaceous-Paleogene passive margin evolution of these eastward vergent external nappes was subsequently replaced by shortening and collision during the Miocene tectonic events. The analysed Lower Kliwa Sandstones Member (Oligocene age) is exposed in External Moldavides units (Tarcau and Marginal Fold nappes) of the thin skinned thrust belt.

This up to 600m Oligocene successions is a deep-water marine turbiditic sequence composed of interbedded thick sandstones layers and siltstones/mudstones (shale, clay, marl). In the Lower Kliwa Sandstones Member, three facies have been previously separated: 1) B facies (B_1) represented by thick fine to medium sandstones (up to 3 meters) with parallel lamination, ripples or mud clasts and with thin mudstone layer in top; 2) C facies (C_2) consists in thick fine to medium sandstones (up to 9 meters), medium to high sorting, in which it has been recognized T_{ae} or T_{abe} terms of Bouma sequence and, 3) D facies (D_1 and D_2) consists in alternation of thin fine sandstones and mudstone (up to 1.3 meter), with T_{c-e}or T_{de} terms of Bouma sequence. The petrography of Lower Kliwa Sandstones Member is primarily quartz sandstones and the mineralogical composition is strongly influenced by diagenesis.

The present 1-3.5km burial depth of the analysed succession is underestimated, since

2-5km of uplift and erosion was recorded during the Miocene shortening and Pliocene-Quaternary post-collisional stage. This is in agreement with our detailed petrographic investigation suggest several diagenetic stages: (1) early diagenesis which is characterized by mechanical compaction, calcite and iron hydroxide cements, autigenetic clay minerals as coatings and glauconite; (2) burial diagenesis is dominated by authigenic quartz as pores cement or quartz overgrowth, calcite cements (pore or poikilotopic type), dissolution of feldspar grains, corrosion and dissolution of quartz grains, pressure dissolution of quartz grains and, biotite chloritization. Our analysis reveals that the genesis of Lower Kliwa Sandstones is linked with the deposition in an outer fan system with depositional lobe sub-systems, being subject to significant diagenetic processes during burial, indicating eodiagenesis, mesodiagenesis and telodiagenesis.

References