



Sedimentation pattern, tectonic control, and basin evolution of the northern Transdanubian Eocene basins (Vertes Hills, central Hungary)

S. Pálfalvi (1), L. Fodor (1), Zs. Kerescsmár (1), M. Báldi-Beke (1), K. Kollányi (1), Gy. Less (2)

(1) Geological Institute of Hungary, 1143 Budapest Stefánia 14, Hungary (palfalvi@mafi.hu),
(2) Department of Geology, University of Miskolc, Hungary

The Transdanubian Palaeogene Basin was situated behind the active Carpathian thrust front. The origin of this basin was long-time debated; suggestions include extensional, compressional, and strike-slip settings.

The Eocene (late Lutetian–Bartonian) sequence started with a lagunal-marine coal-bearing clastic unit. It is covered with shallow marine marl, than open marine claystone. Sedimentation on basin margins were characterized by the Szóc Limestone Fm. deposited on low-angle, relatively narrow carbonate ramps. The inner ramp is represented by 4 microfacies types, which are mainly bioclastic packstones and grainstones composed of foraminifera, red algae, echinoid and mollusc fragments. Mid-ramp is characterized by the predominance of larger Foraminifera under the influence of occasional storms. On the outer ramp glauconitic bioclastic grainstone deposited in current agitated high energy conditions. The main influencing paleoecological factors were depth, light intensity, hydrodynamic energy, substrate, nutrient content, and sedimentation rates. Sediment pattern was determined by two NE striking elevated ridges, and two parallel depressions. Sediment thickness is smaller on the NW (Oroszlány depression) than on the SE (Csákberény depression) side of the intervening Vértes ridge.

This ridge was dissected by NW to W trending syn-sedimentary monoclines, which are frequently breached by syn-sedimentary faults. Surface-rupturing faults were mantled with scarp breccia or conglomerate bodies and were affected by abrasion. The fault planes are occasionally bioperforated. The syn-diagenetic structures include

boudinage, intraformational breccias and sedimentary dykes. Syn-sedimentary structures permitted the estimation of middle Eocene stress field. The compression was oriented (W)NW–(E)SE, perpendicular to the general trend of the paleo-topographic features and could induced gentle folding of the pre-Tertiary basement. Antiform tops were colonised by carbonate-producing organism, and carbonate ramps formed on their fringes. Depressions (synforms) trapped fine-grained siliciclastic detritus.

The observations are in agreement with the model of Tari et al (1993) about the compressional (retroarc) origin of the basin. However, secondary E-W to NW-SE trending strike-slip and normal faults cross-cut the antiforms and seem to be more important in the localisation of the sediment traps. Alternatively, they represent structures post-dating the early folding.

TARI G., BÁLDI T. and BÁLDI-BEKE M. 1993. Paleogene retroarc flexural basin beneath the Neogene Pannonian Basin: a geodynamical model. *Tectonophysics*, 226: 433–455.

The study is supported by the Hungarian Scientific Research Found T 42799.