

# Neogene extension and compression processes in the central part of the Sava depression, South Pannonian Basin, Croatia

Srebrenka Matej<sup>1</sup>, Eleonora Novoselec<sup>1</sup> & Vlasta Tari-Kovačić<sup>1</sup>

<sup>1</sup>INA d.d. — Naftapljin, Exploration Department,  
Šubićeva 29, 10 000 Zagreb, Croatia

In the central part of the Sava depression geological records (exploration wells, seismic and outcrops) clearly evidence two phases of plate convergence characteristic along the northern margins of present-day Dinarides. At the end of the Jurassic the ophiolites were obducted onto the north-eastern margins of Apulian microplate (Inner Dinarides). The second phase is evidenced in the central part of the Northern Dinarides. The Tisza megaunit of present-day Pannonian Basin was subducted under the Northern Dinarides during Late Cretaceous and Paleogene. The subduction processes which terminated by the end of Eocene are evidenced by volcanic arc related magmatism, as well as back-arc trench and accretionary wedge deposits.

In the Paratethys realm the rifting processes started at the beginning of the Early Miocene. According to the well data, the earliest Miocene deposits of the WNW–ESE elongated Sava depression are composed of coarse-grained breccia and conglomerates deposited almost exclusively all along the steeply dipping northern slope of the depression. At the same time the gently dipping opposite slopes of the depressions

were the sites of the fine-grained shallow water clastic and carbonate sedimentation. The shape of the depression and sedimentary facies distribution suggest that the Early Miocene extension created half grabens by the listric faulting. During Karpatian and Badenian the sedimentation was controlled by wrench faulting that produced a succession of the pull apart basins along strike.

After the Badenian rifting processes terminated and continuous, but slower subsidence lasted till the end of the Sarmatian. At the end of the Sarmatian the final interruption of the marine influence is recorded as regional unconformity, with significant erosion of basin edges. The Pannonian compression is well expressed on seismic profiles. It is caused by right-lateral NE–SW wrenching which produced transpression related structures east of the main fault and cuts of the significant part of the depression west of the fault. Late Pannonian and Early Pontian fresh-water deposits created more than 1500 metres thick sedimentary cover.

All these tectonic processes, which involve entire Northern Dinarides and South Pannonian basin, are clearly expressed in the central part of the Sava Depression. They are presented on the poster by selection of the seismic cross-sections and supported by the well data.