magmas could have collected ultramafic xneoliths from a brittle-veined lithospheric mantle. No unequivocal evidence of subduction in the lithospheric mantle has been recorded in the Graz Basin ultramafic xenoliths and we may speculate that the processes which formed the interstitial amphiboles are related to metasomatic events.

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Results of deep seismic reflection profiling across the East Rhodopes, South Bulgaria

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According to recent plate tectonics concepts a probable collage zone is located south of the Moesian platform. This zone consists of terranes detached from Africa and accreted to Eurasia. The East Rhodope exotic terrane is one of them. It is composed of Proterozoic (?) amphibolite facies metamorphics, Mesozoic metamorphic rocks, sediments and basalts intruded by Late Cretaceous granites, all locally overlain by Paleogene sediments and volcanics. The East Rhodope terrane is a pile of thrusts, its deep structure and relations to the West Rhodope terrane being under debate.

According to the first deep seismic reflection profile Ardino-Ivailovgrad (ER1), the thickness of the Paleogene cover is up to 2.3 km. The crust is divided into four superlayers A, B, C and D. The main result is the discovery of a so far unknown tectonic zone imaged on the line ER1c by an about 10 km wide, SW dipping band of moderate to strong reflectors (superlayer D). It cross-cuts superlayers A, B and C and extends into the upper mantle. Superlayer D is interpreted as a pre-Late Cretaceous obduction zone (East Rhodope thrust front) marking the boundary.

Style of postsedimentary deformation in Plio-Quaternary Velenje basin, NE Slovenia

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Velenje basin is 10 km long elongate Plio-Quaternary intermontane depression, bounded by the Periadriatic line zone to the North and by the WNW-ESE trending Šoštanj fault to the South. Basin presumably originated in the regime of dextral transtension between these two fault systems. The basin fill is up to 1000 m thick and shows a typical fill-up sequence ranging from subaerial to lacustrine clastic sediments (Brezigar, 1986). The age of the sediments is poorly constrained except for the mammal remains and pollen content in the upper part of the stratigraphic succession, which indicate Upper Pliocene and Quaternary age (Brezigar et al., 1983), and the age of the basin is arbitrarily taken as Pliocene.

The main part of the basin is a 2 km wide trough-like structure between the Šoštanj fault and similarly WNW-ESE trending Velenje fault. In the basin area, Velenje fault is a boundary between major tectonic units of Kamnik-Savinja Alps to the South and Karavanke to the North (Mioè and nidarèiè, 1983, Brezigar, 1986) and is also a part of the Donat zone sensu Jelen (Jelen, 1994), which separates two major Tertiary tectono-stratigraphic units.

The largest part of data about the basin comes from the Velenje lignite mine. Borehole, seismic and other data show that lenticular, up to 160 m thick lignite seam has a synclinal shape, which is mostly due to the differential compaction of the basin fill. Lignite seam at the SE margin of the basin along the Šoštanj fault is cut by secondary faults and strongly segmented with up to several tens of meters of vertical offset between fault blocks, whereas above the Velenje fault the lignite seam is practically undeformed by faulting.

Using the data of more than 1000 boreholes, the geometry of the upper boundary of the lignite seam in the Šoštanj fault area was modeled and analyzed with various computer-aided techniques. The fault architecture and arrangement and geometry of minor tectonic blocks clearly indicate that the origin of structures is related to dextral movements along master fault(s) of the Šoštanj fault zone.

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