

TERTIARY KINEMATICS OF THE INTRA-CARPATHIAN AREA

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The extensional Pannonian basin of the intra-Carpathian area formed synchronously with the compression along the Carpathian loop during the Neogene (middle to late Miocene). Recent reconstructions of the original position of flysch nappes in the Western Carpathians indicate that the magnitude of shortening in this thrust-fold belt is much higher than it was previously thought. Based on this estimate we restored the pre-Neogene geometry of the intra-Carpathian area. The resulting kinematic picture assumes significant strike-slip and extensional displacements on major transtensional structural features in the Pannonian basin.

The Neogene back-arc basin is superimposed on a set of dissected Paleogene (middle Eocene to lowermost Miocene) basins of apparently different origin. Indeed, these basins do not form a single basin in the reconstructed middle Miocene kinematic picture. The same holds for Mesozoic facies successions showing a peculiar inverted paleogeography. This controversy can be resolved by a further step in the kinematic reconstruction, namely by a late Oligocene-early Miocene episode of eastward directed continental escape of the present-day northwestern part of the Pannonian basin from the Alpine realm. The escaping unit was bordered by the Pieniny Klippen Belt in the north and the Mid-Hungarian Line in the south. The latter shear zone has accommodated roughly 400 km of right-lateral displacement, using the offset between the Paleogene basins of Hungary and Slovenia, as kinematic markers. In the restored pre-escape kinematic picture, the Paleogene basins of the intra-Carpathian area line up in a single basin and the Mesozoic facies distribution also ends up in a consistent pattern.