



Large-scale strike-slip and strain partitioning in an orocline: the Serbian Carpathians of eastern Serbia

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The present day 180° loop of the Carpatho-Balkanides orogen around the Moesian Platform was formed during the Cenozoic oroclinal bending of the Dacia mega-unit driven by the roll-back of the subducting slab during gradual closure of the Carpathians embayment. This oroclinal bending produced variable deformation patterns in different segments along the orogen and at different distances from the rigid Moesian promontory. We have performed field kinematic study in order to understand balance between different deformation styles and effects of strain partitioning during oroclinal bending.

In the N-S oriented Serbian Carpathians segment, the deformation was accommodated by a system of dextral faults, among which Cerna and Timok faults, located in the close proximity of the contact between Dacia and Moesia, retained the largest offset. These curved dextral faults accumulate up to 100 km offset during Oligocene to middle Miocene and connect deformation in the Balkanides with those in the South Carpathians. At farther distances from the contact with Moesia, the strain was partitioned between more diffused dextral strike-slip and normal faults that controlled subsidence and sedimentation in numerous intra-montane basins of the Serbian Carpathians. Even further away from Moesia, at the contact between the Serbian Carpathians and the Morava Valley Corridor (i.e. in the convex hinge of the orocline), strike-slip and orogen-parallel extension temporally and spatially overlap with another extension that genetically belongs to the Dinarides orogen. This juxtaposition creates a fairly complex stress field and deformation pattern. The overall strike-slip and normal faulting was followed in the last stage of the oroclinal bending by an eastwards translation of the South Carpathians that transfer its deformation to top-east directed shortening in the Serbian Carpathians. All these findings demonstrate that large amounts of strain partitioning were recorded in the Serbian and South Carpathians during their oroclinal bending formation.