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Inner Dinarides revisited: Opening and closure of a Neotethys branch in Western Serbia

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The Dinarides mountain belt of south-east Europe represents a segment of a complex Mesozoic large-scale fold and thrust belt situated between the Southern Alps in the NW and the Hellenides in the SE. The Dinaride fold and thrust belt contains continental units of Adriatic/Apulian affinity, as well as several Neotethyan ophiolite complexes situated in between. One of these ophiolite complexes is the well-explored 'Inner Dinaric Ophiolite Belt' (IDOB). However, the paleogeography and tectonic position has been a matter of discussion for a century. The IDOB relationship towards the rest of the Neotethyan oceans has been attempted to be explained with one-ocean and multiple-ocean models. The preliminary results of our structural investigations suggest a tectonic solution endorsing the multi-ocean model. The deformational history starts with the Anisian rifting and transtensional-type opening of a Neotethys branch (''Dinaric Tethys'') marked by normal faults showing the N-S extension direction. The basin opening is sedimentologically manifested by transgressive clastic deposits. The ongoing deepening of this ocean continued with the development of carbonate ramps and platforms, deep sea pelagic environments, oceanic crust production, and accretionary wedging through the Jurassic. Closure of 'Dinaric Tethys' was initiated at the end of Jurassic/beginning of Cretaceous and is manifested by NW-directed thrust faults (NW-SE directed shortening). The Lower Cretaceous is characterized by a hiatus and a considerably large land area formation due to orogen exhumation. This is supported by evidence of unconformities and the occurrence of manganese and iron nodules, which are a product of the surface degradation of ophiolites. Due to post-orogenic collapse and/or due to the transgressive episode/sea level high-stand in Albian-Cenomanian, a new depositional cycle commenced characterized by shallow water clastics and a subsequent carbonate platform with Rudists limestones. This episode is marked by normal faults showing WNW-ESE-directed extension. The closure of these basins is not yet well understood as it does not show a regressive trend. In the Upper Cretaceous/Paleogene, significant strike-slip movement is recorded. Dextral and sinistral strike slip faults showed NW-SE compression and NE-SW extension. This deformation is linked to restraining bends of the NNW-SSE-striking Zvornik fault system. The following younger deformation, marked by WNW-ESE trending sinistral striking faults, is assumed to be Late Eocene E-W compression noted in previous research. The main stage of compression (microplate collision), occurred in the Late Oligocene and is marked with numerous ENE-WSW trending reverse faults, followed by N-S trending dextral and NE-SW trending sinistral strike-slip faults, as well as the formation of NE-SW oriented folds and joints. Following this, the Dinaric Lake System formed in the (latest Oligocene) early Miocene and is marked with normal faults with NE-SW and N-S-directed extension. The last deformational stage is linked to Pliocene-recent N-S trending contraction, which is marked by the youngest set of joints.

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