

Moving Miocene Moesia or what formed the S-shape of the Carpathians?

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The fixed position of the Moesian microplate relative to the European plate has been an axiom for Tertiary plate tectonic reconstructions of the Alpine chain for decades. We challenge these models, and suggest, that Moesia was an indenter pushed into the Alpine orogen from the east. The primary push was exerted by Arabia. Acting as a primary indenter, it caused westward lateral escape of the Moesian–Western Black Sea block into the Carpathian flysch ocean. Moesia, acting as a secondary indenter, collided with the Tisza–Rhodope unit, narrowing it in the centre and causing lateral escape both to the north and to the south. Escaping secondary wedges suffered severe extension in the Aegean and South Pannonian domains, while belts of compression and arc volcanism developed at their prograding fronts. Review of tectonic, biostratigraphic, biogeographic and geochronological data and the evaluation of the orogen-parallel displacements between the Western Alps and the Caucasus indicate, that the Moesian indenter acted con-

temporaneously with the Adriatic indenter in forming the oroclines of the Alps and the Carpathians, and exerted considerable influence on the internal structure of the Pannonian Basin.

Analogous elements of the Adriatic vs Moesian indentation process are:

- *major strike-slip faults bordering escaping wedges:* Periadriatic and SEMP vs Kraishtide and Maritza faults,
- *metamorphic core complexes:* Tauern and Rechnitz vs Békés, Rhodope, Menderes, Cyclades,
- *extensional basins:* Pannonian vs Aegean,
- *accretionary complexes at the fronts of the escaping wedges:* Carpathian flysch belt vs Mediterranean Ridge,
- *subduction-related volcanic arcs:* Inner Carpathian volcanics vs Hellenide volcanic arc.

The S-shape of the Carpathians was formed by accommodation around the Pelso and Tisza indenting wedges in the north and around the Moesian indenter in the south.

Three major pushing forces have been interacting in the PANCARDI region since Miocene time: an E-ward Alpine escape, a NE-ward push of Adria in the Dinarides and a W-ward push of Moesia in the Tisza-Rhodope block. This gives a historical background to the complex pattern of Recent stress field in the region.