

# ORIGIN AND EVOLUTION OF A CARPATHIAN TRIPLE JUNCTION<sup>°</sup>

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## ABSTRACT

The Carpathian triple junction evolved within an area including the actual Carpathian bend zone and North Dobrogea from Romania. It occurred between the three tectonic plates shown in Fig. 1, due to a thermo-tectonic process, at the beginning of Triassic and had a long evolution. This triple junction inherited a Paleozoic almost similar structure. Within its three branches, extending approximately along the actual East Carpathians, South Carpathians and North Dobrogea (Fig. 1), a rifting process was very active, favouring the manifestation of an intra-plate bimodal volcanism. The three branches which met within the Vrancea region, had a common evolution as incipient large rifts or epicontinental basins, from the Lower Triassic up to the Liassic, when the Carpathian Ocean opened (Fig. 2), after the Early Kimmerian movements. It opened along the Carpathian

branches, while the North Dobrogean one was abandoned as a failed branch (aulacogen). Within this ocean zone an ocean crust was generated, that was dismembered by subduction and obduction processes. The ocean opening dismembered the triple junction initial branches into three separate segments. Due to the subduction process a foredeep occurred along the Carpathian branches, within which sedimentary deposits, including island arc volcanics, accumulated from the Upper Jurassic up to Neogene. These formations were folded and thrust during several Alpine orogenic phases. The resulting nappes were overthrust toward the foreland, that included the North Dobrogean aulacogen, too. Tertiary fractures affected also the triple junction structures, especially the post-ocean ones, contributing to their dismembering.

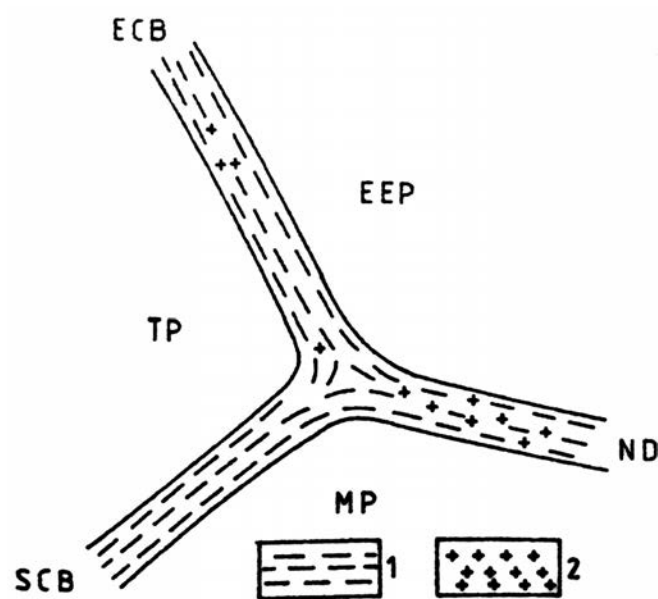


Fig. 1 - Sketch showing the pre-ocean rifting zones of the triple junction. 1- the system of longitudinal faults and basic and acid dykes formed along the triple junction branches; 2- remnants of Triassic lava flows and pyroclastics; EEP- East European Plate; MP- Moesian Plate; TP- Transylvanian Plate; ECB- East Carpathian branch; SCB- South Carpathian branch; NDB- North Dobrogean branch.

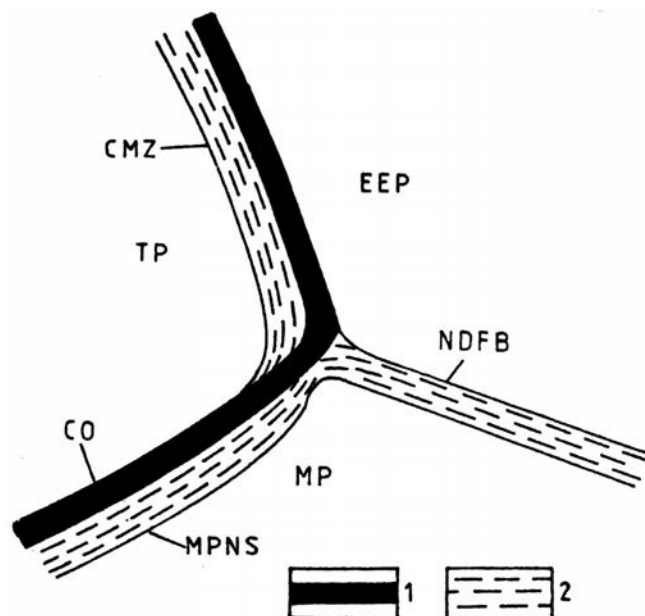


Fig. 2 - Sketch showing the Carpathian Ocean opening (CO). 1- ocean zone; 2- remnants of the three initial branches of the triple junction; CMZ- Crystalline-Mesozoic zone of the East Carpathians; MPNS- Moesian Plate north side; NDFB- North Dobrogea failed branch; EEP, MP, TP, the same as in Fig. 1.

<sup>°</sup> In: Analele Univ. Bucuresti, Geologie, 47, 1998, 3-12.

