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## **Tatric and Veporic crystalline basement of the Western Carpathians (Slovakia): origin, primary position and translation to the Alpine orogenic belt**

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Hercynian or Variscan orogenic belt in Europe was originated as a result of complicate collisional processes between paleocontinents Gondwana and Laurussia between 480 and 290 Ma. This belt in the Western and Central Europe is divided to the northern branch (Renohercynian and Saxothuringian zone) and southern branch (Armorican massif, French Massif Central, Sardina-Corsica segment, Bohemian massif). To the southern branch belong also Hercynian segments now incorporated to the Alpine belt and presented in isolated massifs in the Alps, Carpathians and in the basement below Panonian basin. Direction of nappe thrusting is opposite. In the northern branch the nappe thrusting was oriented to the North towards Laurussia, in the southern branch generally to the South towards Gondwana.

Crystalline massifs in the frame of the Western Carpathians Alpine Tatric and Veporic unit were primary integrated part of the European Hercynian orogenic belt. Traces of the original Hercynian structure were identified in the contemporary Alpine structure of the Western Carpathians.

Crystalline basement in the Western Carpathians is now outcropped in isolated mountain ranges (horsts separated by Neogene grabens) and it is composed of the Hercynian tectonic units and fragments of Cadomian blocks in their substratum. The Hercynian units represent a middle crustal nappe system composed of lithotectonic units differing in the metamorphic grade and lithology, which were thrustured during the Hercynian orogeny to the South. From this point of view and from lithologic and metamorphic similarities we assume that they were originated in the southern branch of the European Hercynian belt.

The crystalline complexes in the southern branch of the European Hercynides, mainly the Massif Central and the External Massifs of the Western Alps, are very similar to those known in the Tatric and Veporic units. Main similarities can be summarized as follows: a) tectonic superposition of similar lithotectonic units (upper epizonal complexes, upper and middle gneiss units, mica-schists in subautochthonous position) with south vergent thrusting; b) analogical specific rock types (e.g. orthogneisses with the Ordovician age of granitic protholit, leptyno-amphibolite complexes containing eclogites); c) similar tectono-metamorphic evolution (high pressure Silurian metamorphism connected with the subduction, followed by the Devonian collision with the development of middle-crustal nappes and granitic intrusions, finally the Late Palaeozoic tectonic stage with evolution of transpressional shear zones, a low grade metamorphism and rifting); d) Cadomian basement below subautochthonous lower lithotectonic unit.

Thus, primary position of the West Carpathians Tatric and Veporic basement we interpret as eastern prolongation of the Massif Central and External Massifs of the Western Alps. Latest, in the final stages of the Hercynian orogeny during the Late Paleozoic and mainly Alpine orogeny during the Late

Cretaceous and finally during the Neogene this basement was disintegrated and gradually transported from the place of its origin along huge strike-slip zones towards the northeast, to the present position in the Carpathian arc.

