

MICHAL KOVÁČ⁺ — IVAN CÍCHA⁺⁺ — IVAN KRYSTEK⁺⁺⁺ ZDENĚK STRÁNÍK⁺⁺⁺⁺
— NESTOR OSZCZYPKO⁺⁺⁺⁺⁺ — DIONÝZ VASS⁺⁺⁺⁺⁺

FIRST VERSION OF GEODYNAMIC, PALINSPASTIC MAPS SERIES OF THE WEST CARPATHIAN NEOGENE ON SCALE 1 : 1 000 000

Neogene is the final stage of evolution of the Alpine—Carpathian suture zone. It was determined especially by direction and rate of folded belt individual segments movements, as well as by platform margin mobility. Direction of the West Carpathian segment movement was generally towards NE. It was manifested by compression at the front of advancing nappes. Space reduction in the outer units of the West Carpathians is accompanied with extension in backland area.

This space reduction is taken into consideration in palinspastic reconstruction of original distribution of sedimentary areas of individual Neogene time intervals. We can determine approximate position of the folded belt of the West Carpathian segment at the Oligocene/Miocene boundary by clock-wise rotation. On the basis of the latest data, shift of the SW part is 60—80 km and shift of the NE part is about 140—160 km. On the other hand, space extension can be estimated to 40—50 km in the inner West Carpathians.

In the outer West Carpathians, sedimentation of flysch troughs is changed to molasse one towards the end of Oligocene and in the Lower Miocene. From the point of view of geodynamics, folding, formation and advance of nappe units during Miocene are important factors. Compression maximum is manifested by overthrust of nappes fronts on foredeep sediments. Gradual disappearance of compression in a certain part of the West Carpathian segment is manifested by termination of nappes fronts advance, whereby an influence of transversal tectonics is evident.

Formation of foredeep is a typical feature of Miocene development of the West Carpathians. In individual periods it spread partly on mobilized margin of the Bohemian massif and North European platform, partly in the region of original flysch troughs and a part was carried on actively thrust sheets (piggy-back basins). Termination of compression leads to gradual disintegration of foredeep since the Middle Miocene. Its depocentres reflect influence of transversal tectonics. Connection of foredeep sedimentary area with backland sedimentary area was enabled by transversal tectonics.

⁺ RNDr. M. Kováč, CSc., Geological Institute of the Slovak Academy of Sciences, Dúbravská cesta 9, 814 73 Bratislava.

⁺⁺ Doc. RNDr. I. Cícha, DrSc., Central Geological Institute, Malostranské nám. 19, 118 21 Praha.

⁺⁺⁺ Doc. RNDr. I. Krystek, CSc., Faculty of Natural Sciences of J. E. Purkyně University, Kotlářská 2, 611 37 Brno.

⁺⁺⁺⁺ RNDr. Z. Stráník, CSc., Central Geological Institute, Leitnerova 2, 602 00 Brno.

⁺⁺⁺⁺⁺ Doc. RNDr. N. Oszczykko, Jagellonian University, Institute of Geological Sciences, ul. Oleandry 2A, 30 063 Kraków.

⁺⁺⁺⁺⁺ RNDr. D. Vass, DrSc., Geological Institute of D. Štúr, Mlynská dolina 1, 817 04 Bratislava.

New, Miocene arrangement of sedimentary basins in folded belt of the inner West Carpathians arises in Eggenburgian. Its depocentres follow at first boundary of the outer and inner units, from here they gradually move southwards to the backdeep region. Basins characterized by great rate of sedimentation (Vienna basin, N part of Danube lowlands, East-Slovakian basin) were formed in the Lower and Middle Miocene in oblique-slip mobile zones. Graben horst structures of backland were formed in the regions affected by extension. An important role in formation of depocentres was played by release of stress at block junctions and in adjacent block interiors of the West Carpathians. Centres of volcanism which reaches its maximum in the Middle and Upper Miocene were also affected by extension. In the Upper Miocene and Pliocene, basins were formed by brachysynclinal down-bending due to the Pannonian thermal anomaly evolution.

First version of geodynamic, palinspastic maps series of the West Carpathian Neogene on scale 1 : 1 000 000 which will be published in the end of 1986 in the Central Geological Institute, Prague, will contain besides classical palaeogeographical legend, brief texts characterizing geodynamics of the West Carpathians in individual time intervals. These intervals express a wider section of time equaling to culmination of movements, i. e. tectonic changes leading to formation of sedimentary basins, as well as sedimentation of the following period are comprised in them. (Example: Movements in the end of Egerian and in the beginning of Eggenburgian caused formation of basins in which Eggenburgian sedimentation took place. Geodynamic map containing such data is a map of Savian movements in interval from 22.5 to 18 m. y.) Maps of Eggenburgian, Karpatian, Lower, Middle and Upper Badenian and Lower Sarmatian are prepared. Maps of Egerian, Ottnangian, Pannonian and Pontian will be prepared in 1987.

This first version of geodynamic palinspastic maps represents a summary of present data on the West Carpathian Neogene evolution, but at the same time it will serve as a suggestion for further research of the West Carpathian geodynamic evolution.

Translated by O. Mišániová