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Paratethys basins and their dynamics at its western end in Slovenia

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Sedimentary records of the area and absence of the record as well provide snapshots of the concerned sedimentary area development in space and time. These permit to perceive how the sedimentary area evolved as a dynamic system along the evolutionary path of states. The perceived evolution of the system is represented by six states and five discontinuous changes in state. The evolution was operated by the iteration of tectonic compression and tension, which has been shown to be the manifestation of underlying tectonic processes taking place at five nested hierarchical levels (NHL): The 1st NHL, the local level; the 2nd NHL, the future Mediterranean, the future Alps and the future Carpathians; the 3rd NHL, the convergent African and European plates; the 4th NHL, Atlantic Ocean floor spreading, and the 5th NHL, the Earth's internal dynamics, the governing level. Thus the present complex organization and structure of the sedimentary and stratigraphic systems of the area emerged from this collective geodynamics in the past. After the Adria and Austroalpin suturing, the result of collision in the western Neotethys Ocean's Vardar and Pindos branches, a strongly tectonized and subaerially exposed area in the suturing domain underwent extension from the middle Late Eocene (around 35 Ma) to Early Oligocene. Basins were filled by delta plain deposits, marginal marine muds and detritic lime, shelf, slope and basin plain massive and laminated muds, interrupted by carbonate debris, carbonate and siliciclastic turbiditic flows, platform algal-miliolid, Nummulites, Nummulites-Discocyclina and Discocyclina lime and during the most of NP 23 and NP 24 biozones by vulcaniclastic gravity flows. The compressional deformation of the extensional basins began with the Adria microplate indentation. Formation of the flexural basin around Kiscellian/Egerian boundary (˜27 Ma) and positive basin inversion ended with the lateral extrusion during the earliest Miocene, and thus with destruction of the

Eocene and Oligocene basins. Deep water Schlier type sediment accumulated during the underfilling stage and shallow water mainly coarse clastic sediments during the overfilling stage. Retreating subduction in the Magura Ocean, slowed down convergence between the African and European plates, extrusional unroofing (exhumation of the Pohorje high grade metamorphic-igneous batholithic complex) and hyperthermal event first triggered rift grabens (mini basins) formation north of the Periadriatic (PAL) and Donat tectonic lines, and then, in the Badenian, on the cold tectonic block south of the lines, as well. The former, a few hundred metres deep basins, were filling up by deep-water gravity flows until the Pontian. The extensional collapse around the Middle/Late Badenian boundary caused sedimentary changes and filling up of the shallow part of the basins by the Sarmatian. In the Late Sarmatian a weak and short compression, uplift and erosion due to detachment of the NW part of the Krosno-Moldavian lithosphaeric slab in the Magura Ocean, affected the basins, followed by the extension and transgression due to the second rifting in the Early Pannonian. The delta started prograding in the Late Pannonian. By the latest Pontian, the delta plain is already detected across the deepest part of the basins. The accumulation of 1700 m of Pontian sediments is the result of the post-rift subsidence coupled with the compression, which we relate to the Apulia counterclockwise rotation. This couplet movement began at around 9 Ma, which is the time of the Tyrrhenian Sea opening. In the Pliocene, the compressional climax caused intense folding, basins inversion and transpression, which destroyed former basins south of the PAL, accompanied by small pull-apart/transtensional basins formation. North of the PAL “dog foot” valleys were created, followed by the rivers because of the reoccurrence of the lateral extrusion.