relations suggest that the zone was active shortly after the thermal peak of metamorphism of the gneiss-migmatite basement of Sredna Gora at 336.5 ± 5.4 Ma, but before the post-tectonic emplacement of one of the largest Late Carboniferous (314 ± 4.8 Ma) granitoid pluton (the Vezhen pluton), which sealed the zone-related fabric of the low-grade metamorphites.

The continuation of the Stargel-Boluvanya Tectonic Zone eastwards (in the area of Karlovo, Central South Bulgaria) is problematic due to the emplacement of Late Variscan syn- to post-kinematic granitoids as well as the Late Alpine thrusting. Nevertheless, in this segment the geometry and kinematics of the penetrative deformation fabric, again suggest transpressive shearing. Here, no direct contact between the high- and the low-grade metamorphites has been observed. It is "obscured" by voluminous granitoid magmatism represented by batholitic-scale, foliated to isotropic granitoid bodies. The foliated bodies (Karlovo-Ribaritsa granitoid suite) represent NW- to W-trending granite sheets concordantly emplaced into low-grade metamorphites. The granitoids exhibit a steady S-dipping solid-state foliation and very rarely magmatic layering and foliation. The stretching lineation is dominantly strike-parallel - E-wagnerW to SW-NE oriented. Along the contacts of the bodies evidences of a "lit-par-lit" emplacement have been observed. In the immediate host rocks, widespread granitoid dykes are intensively mylonitized. Meso- and micro-scale observations indicate mid- to high-temperature greenschist facies conditions of the solid-state overprint. Up to now none of these bodies have been precisely dated but the preliminary results of U-Pb dating of zircons (oral communication, Albrecht von Quadt) point to Late Carboniferous emplacement. Rather similar is the age of the unfoliated granitoid bodies post-tectonically emplaced into both the low-grade and high-grade metamorphites.

On the bases of the available structural and age data we can speculate that during the Mid and Late Carboniferous the transpressive shearing along the Stargel-Boluvanya Tectonic Zone led to: i) final exhumation of the high-grade basement of Central Sredna Gora shortly after the migmatization process; ii) formation of the syn-metamorphic fabric of the low-grade metamorphites; iii) creation of pathways for emplacement of voluminous magma batches. The zone played a major role during the amalgamation of two pre-Mezozoic terrains with contrastingly different evolution.

First report of Stromatocystites (Echinodermata) from the Middle Cambrian of Turkey: Palaeobiogeographic implications

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Stromatocystites is one of the oldest and most primitive known echinoderms. This genus is relatively common in early to middle Cambrian deposits of Baltica (Sweden) and Gondwana (Australia, Bohemia, Newfoundland, Spain). It possibly also occurs in younger (Late Cambrian) strata of Montagne Noire (S. France). *Stromatocystites* is characterised by rounded to slightly pentagonal outlines, a flattened, biscuit-shaped body consisting in 1) a domed, polyplated, oral (upper) surface bearing five ambulacra and numerous respiratory openings (sutural pores); and 2) a slightly concave aboral (lower) surface. Such a morphology is extremely plesiomorphic within echinoderms. *Stromatocystites* differs from basal blastozoans (e.g., *Lepidocystis*) by the absence of free ambulacra (brachioles), from basal crinoids (e.g., *Titanocrinus*) by the absence of body wall expansions (arms), and from basal edrioasteroids (e.g., *Cambraster*) by the absence of a well-differentiated marginal ring. We report here on the recent discovery of two well-preserved specimens of *Stromatocystites*, collected within a shale interval in the upper part of the Middle Cambrian (Drumian) Koruk

Formation of Hakkari-Çukurca area (southeastern-most Anatolia, close to the border with Iraq). One specimen shows an almost complete oral surface, whereas the other one exhibits a typical lower surface. These two specimens are the oldest fossils of echinoderms ever reported so far from Turkey, and the first record of *Stromatocystites* in this part of the world. From a palaeobiogeographic point of view, the new Turkish fossils are particularly interesting, as they occur in a peri-Gondwanan region intermediate in latitude between western (Bohemia, Newfoundland, Spain) and eastern (Australia) occurrences of *Stromatocystites*. The morphology of the two Anatolian specimens is apparently closer to *S. pentagularis* (Bohemia, Newfoundland, Sweden), than to *S. flexibilis* (Bohemia), *S. reduncus* (Australia), or *S. walcotti* (Newfoundland). The occurrence of *Stromatocystites* in southeastern Turkey is in good accordance with the Mediterranean-Acado-Baltic affinities observed for other faunal elements reported from the same area (e.g., trilobites). It also confirms the existence of regular faunal exchanges, and thus the palaeogeographic closeness, of Baltica and various peri-Gondwanan regions in middle Cambrian times. As a consequence, future field work in the middle Cambrian of Hakkari-Çukurca area will possibly yield additional echinoderm taxa typical of Mediterranean-Acado-Baltic regions, as for example the eocrinoid *Cigara* and/or the stylophoran *Ceratocystis*, which both occur along with *Stromatocystites* in both Bohemia and Sweden.

Some remarks on the biostratigraphy and paleoecology of the Middle Miocene Machów Formation (Carpathian Foredeep, Poland)

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The Polish Carpathian Foredeep Basin (PCFB) is the northern part of a large foreland basin system that surrounds the Carpathian orogenic belt. Like other foreland basins, the PCFB is asymetric and filled mostly with clastic sediments of the Miocene age up to 3,0 km thick at the Carpathian front and to few hundred meters in the northern marginal part. Molasse deposits of the PCFB, underlain by the platform basement, dips southward underneath the Outer Carpathian napes to a distance at least 50 km. The PCFB is subdivided into two sub-basins: the inner and outer ones, located respectively south and north of the Carpathian frontal thrust. The outer sub-basin is composed of Middle Miocene autochthonous marine strata. The Miocene succession is subdivided into three formations: the Skawina Fm- sub-evaporitic, Wieliczka/ Krzyżanowice Fms.- evaporitic and the Machów Fm- supra-evaporitic. The last one is predominantly represented by siliciclastics sandstones and shales couplets. The age of this formation traditionally was assigned as Late Badenian and Early Sarmatian on the basis of foraminiferal research mainly. Our studies of the Machów Fm were concentrated in the eastern part of the PCFB, north of the Rzeszów. In this area we collected samples from five boreholes, in following depth intervals: S-2 (Stobierna): 1016-1338 m; S-3: 715-1669 m; S-4: 1016-1238 m; SB-1(Stara Brzóza): 350-356 m and 1043-1667 m; P-2 (Pogwizdów): 1161-1390m. The uppermost (above 350 m) and lowermost (beneath 1669) part of Machów Fm. was not studied because of the lack of core material. The aim of the study was to provide the biostratigraphic and paleoecological analyses for the Machów Fm. For this purpose smear slides from all collected samples were prepared using the standard method, and analyzed under light microscope Nikon Eclipse E600POL (LM, 1000x magnification) at normal and crossed nicols. The qualitative analysis were carried out for all the samples whereas the quantitative analysis only for the chosen boreholes S-3 and S-4.The obtained biostratigraphic data gave evidence for the upper part of the NN6 (the Early Sarmatian) and for the NN7 (the lowermost part of the Late Sarmatian) Zones. The whole sections investigated in S-2, S-4 and P-2 were classified to NN6 Zone. In S-3 interval 1669-1113 m was assigned to NN6, whereas section 843-715 m to NN7 Zone. In SB-1 interval 1667-1043 m belongs to NN6 Zone, interval 350-356 m was classified to NN7 Zone. The *Discoaster exilis* Zone (NN6) was defined by the presence of *Reticulofenestra pseudoumbilica, Sphenolithus abies*, *Helicosphaera walbersdorfensis* and absence of