Jurassic to Early Cretaceous sediments of the Transdanubian Range, Hungary – a unique tectonic unit within the Alpine-Carpathian system and its palaeogeographic provenance

Császár G.[1] and Gawlick H.-J.[2]

[1]*ELTE University, Budapest, csaszar.geza@gmail.com*
[2]*University of Leoben, Department for Applied Geosciences and Geophysics, Prospection and Applied Sedimentology, Peter-Tunner-Strasse 5, 8700 Leoben, Austria, hans-juergen.gawlick@mu-leoben.at*

According to the extrusion or escape model the Pelso tectonic unit should be palaeogeographically situated before Palaeogene and Early Neogene tectonic processes between the Eastern and Southern Alps (SA). In this long known palaeogeographic reconstruction the Early Cretaceous sequence of the south-western part of the Transdanubian Range (TR) (South Bakony and Zala Basin) should resemble the Maiolica/Biancone facies successions of the SA. In contrast the Early Cretaceous of the Gerecse Mts. should correspond to the Rossfeld sequence in the Salzburg Northern Calcareous Alps (NCA). It is not so well known that there are also significant facies differences between the south-western and the north-eastern segments of the TR and that these differences also correspond to those of the SA and the NCA. The basal Jurassic of the SA developed in huge areas on top of shallow-water carbonates, which were deposited in direct continuation of the Late Triassic platform in varied tectonic subunits: Friuli Limestone (Calcari grigi del Friuli), Misone Limestone (Calcari grigi), or San Vigilio Limestone (Calcare oolitico di San Vigilio). These formations correspond to the Kardosrét Lst. in the Bakony; in contrast this facies is missing in the NCA and also in the Gerecse Mts. One of the most typical facies of the Jurassic is the ammonite-bearing, red, nodular, clayey limestone ("ammonitico rosso") both in the SA and the Bakony. It is called Tűzkövesárok Fm in the Early Jurassic, Tölgyhát Fm in the Middle Jurassic and Pálihálás Fm in the Late Jurassic in Hungary. A more deep-water formation is the radiolaritic Selcifero Fm in the Lombardy and the Lókút Radiolarite (Bakony Mts.) in the late Middle Jurassic to Oxfordian. The larger part of the Late Jurassic and the Early Cretaceous in the Lombardian Basin is represented by the Maiolica facies, while it is only developed in the Tithonian to Hauterivian and pinches out eastward in the Southern Bakony. Jurassic successions of the Gerecse Mts. show similarities to those known from the Tirolic units of the NCA. The base of the Jurassic in the Gerecse is represented by the Pisznice Lst., equivalent to the condensed red limestones of the Adnet Group of the NCA. Both of them cover the surface of the Dachstein Fm. with gentle angular unconformities. Sedimentation on submarine highs is characterized by condensed red limestones; in contrast in the basinal areas grey cherty limestones were deposited. On the Middle Jurassic highs, the red, nodular limestone is called Klaus Fm. in the NCA and Tölgyhát Lst. in the Gerecse. It is followed by the Ruhpolding Radiolarite in the NCA and Lókút Radiolarite in the Gerecse. In the Tirolic units of the NCA the radiolarite succession contain several olistromatic breccias, partly of exotic and partly of local provenance (Hallstatt and Tauglboden Mélanges). The Lókút radiolarite of the TR is followed by or include a breccia bed called „Oxfordian breccia", which may correlate with the Tauglboden Breccias. The Agatha Fm. of the NCA mirrors the Pálihálás Limestone of Kimmeridgean–Early Tithonian age in the Gerecse, while the Oberalm Fm. matches the Szentiványhegy Lst. of the Tithonian-Berriasian. In the Early Cretaceous the carbonate succession is replaced by turbiditic siliciclastics (Bersek Marl Fm. in the Gerecse and Schrambach Fm. in the NCA). The sedimentation changed from carbonate into siliciclastics diachronously and the time equivalent Felsővadács Breccia Mb as a mass-flow deposit cuts this boundary in the Gerecse. This breccia is thicker and wider spread in the NCA and called Barmstein Breccia. This body is replaced by the lowermost coarse-grained turbidites of the lowermost Rossfeld evolution. Upsection the Bersek Marl is followed by the Lábatlan Sst in the Gerecse and the lower part of the Rossfeld Fm. by the upper one in the NCA In both regions the Rossfeld coarsening-upward cycle was interpreted as expression of nappe thrusting, whereas for the NCA nowadays for the Rossfeld Basin fill a foreland-basin character (Molasse sediments) is favoured.

Conclusion: The TR is a special tectonic unit showing in part homogeneity to the SA (Bakony) and in part to the NCA (Gerecse). So its original palaeogeographic position has been situated between the NCA and the SA.

Introduction to the WG project on correlation of Mesozoic lithostratigraphic units of the CBGA area

Császár G.[1], Wagreich M.[2] and Michalik J.[3]

[1]*ELTE Univesity, H-1117 Budapest, Pázmány Péter sétány 1/c, csaszar.geza@gmail.com*
[2]*University of Vienna, A-1090 Vienna, michael.wagreich@univie.ac.at*
[3]*Slovak Academy of Science, P.O.Box 106, 84105 Bratislava, geolmich@savba.sk*

The main aim of the WG project is to identify and correlate lithostratigraphic units developed within the CBGA region. Although there are some lithostratigrahic units the names of which are used internationally within the region, the overwhelming majority of the units has special names from country to country in spite of the fact that many of the units are crossing one or several country borders. Therefore we want to identify and correlate major lithostratigraphic units in order to exclude unnecessary repetitions of names for well identifiable lithostratigraphic units. Calculating just 400 Mesozoic lithostratigarphic units by countries, in the CBGA region altogether there can be around 5000 units from which let us say 10% are common at least in two countries. This way the great amount of names could be decreased by 500. Supposing there are several units crossing 3-5 or even more country borders the number of lithostratigraphic units could be diminished by another 500.

What is the advantage of decreasing the numbers of names? It can promote a better understanding of the geological and geotectonic setting and via this the geological history of certain areas or broaden the frame of the known areas. Correlation of unified units from one segment of the Alpine orogen to the other will help in further understanding of the Tethyan closure and the Alpine mountain building. Besides that, how great advantage would it be for students if they could operate with fewer numbers of names.

Difficulties may arise while trying to correlate and unify lithostratigraphic units from country to country. We know that there aren't any formations with 100% identity; if we succeeded in correlating a few formations we shall select a common name from among those names used so far in one of the countries for the future to be accepted by the national committees. We shall agree in regulations in advance to follow it in those cases where the solution is not obvious for everybody. There can be several stand points such as: which name was given first; which formation was described most properly; which formation's stratotype is better and more easily accessible; which name can be written and pronounced more easily, etc.

Because of the great number of lithostratigraphic units, and in order to promote the successful correlation the WG is subdivided into sub-WGs: Triassic Sub-WG, Jurassic Sub-WG and Cretaceous Sub-WG.

The introductory talk wants to give general information about the aims and structure of the project, about the approach and steps to be used during the process and also wishes to introduce proper situation when the correlation was successful without forcing it.