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Aims and results of correlating Mesozoic lithostratigraphic units between the Alps and the Pannonian Basin

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In the Alpine–Carpathian and Balkan area at the very beginning of the geological activity it was clear that the Mesozoic successions have many similar characters. The intensive research in the Eastern Alps preceded the rest of the area and several names (Dachstein Limestone, Hauptdolomite, Werfener Schichten, Pötschenkalk, Hallstätter Kalk, Hierlatzkalk, Adnet Limestone, Gault-Flysch etc.) have been overtaken by the CBGA countries from the Eastern Alps partly in translated form.

Since the establishment of the lithostratigraphic units in the neighbouring countries there is a desire to compare and correlate their units with each other in large areas of the Earth. This activity is promoted (supported) in the territory of the Carpathian–Balkan Geological Association as well, via establishing a Working Group with the same aims in the territory of the member countries. The similarity of the Lower Cretaceous clastic succession of the Salzburg and the Gerecse areas (North-eastern part of the Transdanubian Range in Hungary) was recognised already in 1868 by Hantken and later based on the fossil community by Somogyi (1914). The similarity of the Berriasian to Hauterivian part of the Lower Cretaceous succession has been recognised by Noszky in the thirties of the last century thanks to the co-occurrence of the South Alpine biancone (maiolica) facies in the South Bakony as well.

Several similar successions are found to have occurred since the geological activity became intensive. Thanks to the joint correlation between the most promising territories there are already a few unexpected results as well. The first surprising conclusion of the correlation activity was introduced in 2010 (Csaszar and Gawlick) saying that the Transdanubian Range is a unique tectonic unit in the Alpine–Carpathian system which has preserved up to this day its original connection to the North-Alpine and the South Alpine (SA) development. This conclusion verified the close relation between Upper Jurassic – Lower Cretaceous successions of the Salzburg area in the Northern Calcareous Alps (NCA) and the Gerecse Hills, but more formations and events became correlated such as the Member rank units of the Oxfordian breccia in the Gerecse and in the Eastern Alps and the Berriasian Felsővadács Breccia (Gerecse) and the Barmstein Breccia (Eastern and Southern Alp; Gorican 2012). The latter ones have an important aspect namely that the breccia grains are in parts green algae-bearing platform limestone origin (Plassen Carbonate Platform and equivalents) which derives from another tectonic unit. These breccias clearly indicate the same tectonic event. The overlying marl and sandstone formations are also found in both places including the very coarse-grained breccias and conglomerates bodies of varied lithology (e. g. rudistid and coral bearing limestones and black cherts). The Transdanubian Range (TR) has a syncline structure of NE–SW orientation with Jurassic and Cretaceous formations in the axes. In the middle part of the syncline the uppermost Jurassic and Lower Cretaceous formations are missing because it was elevated towards which the break of sedimentation lasted longer from both NE and SW directions.

The correlation of Mesozoic formations of the broader Salzburg area and the Gerecse Hills and also the Bakony and Southern Alps has been emphasized, but an important step is still missing. We are still using original lithostratigraphic names of the NCA, the SA and the TR instead of agreeing in the key sections of the correlated formations and using their names for the relevant formations. It means this step is still ahead of us.

To decrease the number of lithostratigraphic names with special attention to the formation rank is a very important task at least from two points of view: (1) avoiding to use unnecessary names, (2) usage of the approved names is a clear indication for the close relationship of the relevant areas.