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Correlation of Mesozoic lithostratigraphic units of the East-Alpine Bajuvaric and Tirolic units and the North Eastern part of the Transdanubian Range

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Although in the Transdanubian Range formations in the Lower and Middle Triassic are already similar to those in several East Alpine tectonic units but great similarities are found in the Upper Triassic, in particular in the Tirolic and Bajuvaric Zones. There were facies differences within the Transdanubian Range in northeast – southwest direction already in the Early Triassic. In the Middle and Late Triassic within the platform carbonates pelitic shallow basins developed locally. These differences are characteristic for the Tirolic and Bajuvaric nappes in Austria as well. From this time onwards several lithostratigraphic names have been taken over from the Eastern Alps: Hauptdolomite (in translated version: Földolomit), Dachstein Limestone, Kössen Fm. At the same time some of the well correlated units have different names yet in Hungary (e.g., Raibl Fm. = Veszprem Marl). The Late Hettangian rifting and the Toarcian break-up in the Penninic Realm led to a completely new palaeotopography. The result is horst-and-graben topography on a large area of the rifting zone. Nevertheless the first signal of fundamental differences between the Bakony and the Gerecse occurred already during the Hettangian Age, when oncoidic Kardosret Limestone was deposited in the Bakony, while in the Gerecse, Vértes, Pilis and Buda-Hills area the Dachstein Limestone has an erosional surface. There is only one common lithostratigraphic name in the Eastern Alps and the Transdanubian Range in the Lower Jurassic Series (Hierlatz Limestone) while another one has different names (Adnet Lms. = Pisznice Lms.). Stronger altitude differentiation of the basement started in the Toarcian. There are no common lithostratigraphic names in the Middle Jurassic although the Klauskalk in the Tirolicum is similar to the Tölgyhat Limestone and the deep-water Ruhpolding Radiolarite is equal to the Lokut Radiolarite. The situation in the Upper Jurassic is the same. The “Oxfordian breccia” is the first signal of the increased tectonic activity in both areas. It is called „Rofanbrekzie” in the Eastern Alps within the Ruhpolding Radiolarite. The Ruhpolding Fm. in the Tirolic and Bajuvaric nappes is overlain by ammonitic marly limestone followed by the Oberalm Limestone. The „Oxfordian breccia” in the Gerecse called Pockó Chert Member is only 1-2 m in thickness and developed either in the Lokut Radiolarite or in the lower part of its overlying ammonitic Palihalas Limestone Fm. The latter one is red, nodular limestone and at least in colour it is different from the overlying bed of the Ruhpolding Radiolarite. The equivalent of the Oberalm Fm. in the Transdanubian Range is the Szentivanhegy Limestone. Radical change in the sedimentation started with the occurrence of the fine-grained flysch type Schrambach Fm in the Bajuvaric and Tirolic nappes and in the Bersek Marl Fm. in the Gerecse Hills. The sedimentation continued with deposition of the coarse-grained Rossfeld Fm. and the Labatlan Sandstone Fm. respectively. The uppermost part of the Labatlan Fm. is called Kőszörűkőbánya Conglomerate Mb. of debris cone origin at the base of a steep submarine slope. Predominant component of the conglomerate and breccia grains are chert but it contains some fragments of basalt, gabbro, polycrystalline quartzite sandstone, lithic sandstone, phyllite and slate. In the uppermost beds there are limestone breccia beds with rudist bivalves, hydrozoans and even corals. The grain size of the flysch type Labatlan Fm is getting finer and finer southwest direction while the water depth is shallowing. As it can be seen the Mesozoic succession of the Bajuvaric and Tirolic part of the Eastern Alps and the north-eastern part of the Transdanubian Range are relatively well comparable from lithostratigraphic point of view while tectonic point of view there is a great difference between them. Nevertheless based on the occurrence of the flysch and its lithologic composition the presence of nappe structure in the broader environment of the Gerecse cannot be excluded but the sediment transport is supposed to be southward direction. The Upper Cretaceous is completely missing in the broader Gerecse area but it is developed in the Bakony Mts after a long break owing to the Middle and Late Alpine tectonic phases.