Margecany (the type outcrops of radiolarite-basalt succesion along the railway at the local cement factory were sampled)

In a red cherty limestone intercalated in the basalts, Triassic radiolarians (together with some poorly preserved conodonts (similar conodont fauna was previously found here by Kozur & Mock) with a mixture of some Jurassic ones, were extracted by dissolution. Microfacies of most of the reddish cherty limestone to radiolarites, is evidently Triassic. From a reddisch cherty limestone to radiolarite overlying the basalts, following radiolarian fauna was extracted: *Actinomma. cf. siciliensis, Crucella squama, Crucella spp., Hagiastrum sp., Paronaella pygmaea, Praeconocaryomma spp., Spongotripus sp., Elodium cameroni* and *Hsuum parasolense*. The assemblage indicates Middle Jurassic age (Aalenian to Bajocian with two species; Callovian to Oxfordian indicated by one species). Estimation of the exact stratigraphic position is problematic due to the actual knowlegde of the age range of the species.

Meliata (the type locality of the meliata Unit)

Late Middle Jurassic matrix between the olistostromes and slide blocks of the upper part of the succession has already been investigated. The Lower part of the section was interpreted as a continous Anisian to Carnian sequence. A sample from the basal part of the section below the Ladinian cherty limestones and radiolarites and above the Anisian limestones yielded *Higumastra winteri, Dictyomitrella cf. kamoensis, Stichocapsa cicciona*, and *Zhamoidellum cf. ovum*. The assemblage indicates the Callovian to Early Oxfordian age. A sample taken higher, but still in the basal part contained *Sethocapsa cf. kodrai* indicating late Middle Jurassic. Microfacies of the samples represent radiolarian bearing filament limestone (resembling silicified Bositra limestone with radiolarians). In the upper part of the Meliata type section occur several grey limestones and dolomites in a late Middle Jurassic mélange. Besides Carnian limestones also Norian grey limestones occur representing typical components which were derived from the grey Hallstatt facies (Pötschen sequence in the Eastern Alps).

The studied samples all contain Jurassic or mixed Triassic-Jurassic fauna which is in accordance to the mélange character of the Meliata Unit with Triassic/Jurassic blocks and Middle to early Late Jurassic matrix. However, no new constraints concerning the time difference between the southern and northern occurrences of the Meliata Unit are possible.

The floods and regime of Hármas-Körös since river regulation in Hungary

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The studied area is located in Hungary, one of the deepest parts of the Carpathian Basin. Körös Rivers (it means Fekete-, Fehér-, Kettős-, Sebes-, Hármas-Körös) is belonging to Tisza river drainage basin that is the second main watercourse in the country. The Körös catchment area is 27,537 km^2, but 53% is in Romania, and 47% is in Hungary. Vast areas of the Hungarian Plain were flooded by the Paleo-Tisza and its affluents; and the river itself had not fix bed. The settlements were threatened by the enormous flood hazards returning year by year. The flood control has a long history in Hungary, because barrages were already built in 1613 along Tisza and other rivers. The real work started (with mapping) when a big flood was happened in the Körös–Berettyó region, in 1816. The Körös river regulation plan was made by M. Huszár, who distributed the work, and gave the depth and width of the bed, barrages distance and dimension. He determined the width of the active floodplain: by Hármas-Körös 379 m, by Kettős-Körös 246 m, by Sebes-Körös 246 m, by Fekete-Körös 190 m, by Fehér-Körös 114 m. The river regulation of the Danube and Tisza, and their affluents, was the most important reform in the remaking of nature in the 19th century Europe. These impacts were filled the requirements of the era's economic and social assumption. Low and a high water level database were made for the time interval between 1907 and 2006 with two water gauges in case of analysing the regime of Hármas-Körös River. The low water level had occurred in

winter time (57%) in Gyoma (first water gauge), the lowest was -116 cm on 3rd August in 1930. The highest water level had happened in the first five month of the year. The highest water level was 918 cm on 9th July in 1970. The biggest difference was 943 cm in 1919. In Kunszentmárton (second water gauge) the lowest water level had happened in winter time (69%) as well, and the lowest water level was -240 cm on 24th August, 1946. The highest water levels occurred in January, March, April, and May. The highest water level was 1041 cm on 21st April, 2006. The biggest difference was 1134 cm in 2006. We are dealing with measurements of alluvial deposits of floodplain, as well. The sampling was made at the Hármas-Körös River in Takács-zug. The aim of the study to find out the amount of flood deposits on the floodplain after the river regulations. Geomorphological mapping was made near Kunszentmárton and Öcsöd in scale 1:10 000. The new map demonstrates some paleo-drainage system of the study area. The thickness of alluvial deposit is increased with 150–180 cm after the river regulations on the study area. The greater part of mapped area is high floodplain; a low floodplain is deepening into this, which was perhaps a fossil riverbed. This low floodplain was occupied by Körös River. The deposits of the last few year of the 20th century could be easily recognized; it is 5–13 cm by floods.

Romanian mud volcanoes – main features and methane flux to the atmosphere

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Studies performed in the last decade have shown the importance of geological sources in releasing methane, an important greenhouse gas, following only to carbon dioxide in the ranking of global warming producing gases. The IPCC Fourth Assessment Report, released in 2007, for the first time considers the geologic source of methane beside the other natural sources taken into account in the previous reports.

Mud volcanoes are important methane releasing geological features, occurring onshore and offshore in many parts of the world. Most of them are located in compressional settings, although in some cases they may be found in other tectonic environments. Most commonly, the onshore mud volcanoes are cone-shaped, with variable dimensions, from a few meters in diameter and less than one meter in height, to several kilometres in diameter and hundreds of meters in height. The shape of the mud volcanoes depends on the nature of the expelled fluids. Convex shapes are formed when the mud is viscous, but very frequently, circular pools with muddy water occur when the mineral fraction/water ratio is very low. In Europe, mud volcanoes are distributed in some specific areas. Such features were identified in Italy, Romania, and their occurrence continues eastward on the northern shore of the Black Sea (Ukraine, Russia), and in the Caucasian – Caspian area, where the world's most impressive mud volcanoes were described.

The most important Romanian mud volcanoes are located in Berca area (Carpathian Foredeep), close to the bending zone of the Carpathian chain. These mud volcanoes are distributed in four distinct areas: Paclele Mari, Paclele Mici, Fierbatori, and Beciu, and seem to be the biggest in Europe, excepting the giant structures in Azerbaijan. In Transylvania, quite numerous methane releasing structures were identified. The mud volcanoes here are generally small, not exceeding a few meters in height and tens of meters in diameter. In some spots, dry gas emissions occur.

In the past years, the methane flux was measured by using the classical closed chamber method. After the chamber deployment, gas samples were collected by syringes and analysed in the laboratory by gas chromatography. Recently, an innovative measuring method was introduced by using a portable methane and carbon dioxide fluxmeter. Specific sensors for the two gases are connected to the accumulation chamber, and after deploying the device in the field, the gas concentrations are measured and fluxes derived. This new method has been used until now in Transylvania and a total flux of about 680 t CH_4^{y-1} was estimated for the