features (Hungarian Standard No. 20381/1999), we have made detailed description of different objects, we have taken photographs of them and gathered sedimentological samples for the laboratory investigation. The geological maps and DDM were created by the Golden Software SURFER 8.0 and the CorellDRAW 12. programs.

The main geological value of the Hegyes-kő Hill is the Miocene Gyulakeszi Rhyolite Tuff Formation: non-welded rhyolite tuff layers and its special geological structure. Somewhere, we can found Pleistocene slope clays at the top of the rhyolite tuff surface. Holocene fluvial sediments build up the alluvium of the Stream Laskó. Non-welded rhyolite tuffs build up the hivestones too and their environments were investigated in details. We have categorised as a geological value the rhyolite tuff layers appeared in the surface, thin and thick layers of the rhyiolite tuffs, its special geological structure and the special (bio)crust appeared on the surface of stones (8 pieces). We have gathered 10 sedimentological samples on the barren rock surfaces or rhyolite tuff surface covered by soils. Therefore these samples were few centimetres thick only; their appearance and genetical development were diversified. The physical parameter and granulometric investigation of the sediment samples can show strongly mechanical and chemical weathering processes. The frost weathering was strong here, but the formation of soil has begun at the top of the hill and environments of cliffs.

In the Hegyes-kő Hill, the most frequently geomorphological values (27 pieces) are periglacial landforms/cryoplanation walls (23%), special cliff forms (15%), derasional valleys (12%) and erosional rills (12%) here. The forms of gelisolifluction and rock-falls are as different types of mass-movement processes (8%). Water cuts (8%), dissected surface with microvalleys appeared on the rhyolite tuffs (4%) and eroded rhyolite tuff surfaces (4%) are in the hill. Different Pleistocene fluvial terraces (4%) can be investigated in the environs of the hill. After the cadastral survey of the unique natural values, we could find that this territory is rich in geological and geomorphological values and the protected status could be reached into these value categories too.

Next to the study area, significant landscape changes appeared because of the buildings and the development of „Thermal valley". The original landscape, the buffer zone and natural values are in danger of buildings, human impacts, illegal dumping of waste and trample erosion.

Subduction-related Jurassic gravity deposits in Bükk-Darnó Area, Northeast Hungary

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Jurassic sedimentary sequences of pelagic basin facies and slope-related gravity deposits occur in several places in North Hungary (Bükk Mountains, Darnó area, Rudabánya Hills). The aim of the paper is to characterise the Jurassic formations of the study area with special regard to the redeposited sedimentary rocks in order to get information on the provenance of the clasts, and the mode and time of their redeposition. In the Bükk Mts., the Mónosbél Group contains various redeposited sediments showing an upward coarsening trend. They were deposited in Bathonian in subduction-related basins formed in the course of subduction of the Neotethys Ocean. The lower part of the complex is typified by pelagic carbonates, shales and radiolarites with andesitic volcaniclast intercalations. The higher part is characterised by polymictic olistostromes. Large olistoliths that are predominantly blocks of Bajocian shallow marine limestones (Bükkzsérc Limestone) appear in the upper part of the

sequence. Evolutionary phases of the sedimentary basins were defined from an early extensional stage of the subduction, through island-arc formation, to the compressional stages when onset of nappe stacking gave rise to formation of polymict olistostromes and then redeposition of large blocks derived from out-of-sequence nappes of the previous platform foreland. Remarkable differences between the composition of the redeposited clasts in the olistostromes of the Bükk and Darnó area indicate deposition in different subduction-related subbasins.

Hydrothermal Pb-Zn-Au-Ag and Cu-Au mineralisation in the Kassandra mine district, N Greece: a metallogenetic model with regional economic implications?

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Mining has a long tradition in SE Europe, is important for today's regional economies, and will play a key role in helping secure future supplies of raw materials in Europe. Of particular importance is the Serbomacedonian–Rhodope metallogenic province developed throughout Serbia, Kosovo[*], FYROM, Greece and Bulgaria. The Kassandra mine district (KMD) in N Greece is part of this economically important region and since ancient times one of Europe's largest Au and Ag resources. The close proximity of different types of magmatic-hydrothermal deposit of known economic importance makes the KDM an ideal location for studying the genesis of base and precious metal deposits in the context of the regional geodynamic evolution. However, despite available data, the knowledge about the timing of magmatism and mineralisation is limited and an overarching, genetic district model is distinctly lacking.

Mineralisation in the KMD is related to Tertiary (Oligocene - Miocene) I-type, calc-alkaline magmatism in the metamorphic hinterland of the Hellenic orogen. The crystalline basement of the KMD is characterised by a tectonic nappe stack of Palaeozoic to Precambrian gneisses and marbles of the Kerdillion Formation and an ophiolitic mélange unit consisting of peridotites, dunites and amphibolites. Olympias and Mavres Petres are Pb–Zn (Au–Ag) carbonate-hosted massive sulphide replacement deposits. Both are interpreted to represent the distal and proximal part of a structurally controlled, skarn-type ore system on the footwall of the main detachment for the Southern Rhodope metamorphic core complex (SRMCC) — the Tertiary transtensional Stratoni–Varvara Fault. Recent work has made a step change in understanding the geological evolution of the N Aegean and suggests the SRMCC as a controlling factor in the regional mineralisation, requiring a reinterpretation of existing mineralisation models in this geodynamic setting. Skouries is a nearby Cu–Au porphyry resource and is part of a suite of mainly unmineralised porphyry stocks that intruded the hanging-wall of the same fault. The syenitic and dioritic to andesitic stocks were emplaced in a local intrusive belt, presumably along deep seated faults. The geodynamic–tectonic setting of this emplacement, subduction, continental arc or orogenic collapse, is hypothetical and not proven. PGE concentrations in the ore concentrates from the Cu–Au porphyry at Skouries and Fe–Ni–Co–V sulphides in a porphyry-style alteration system in vicinity to Skouries suggest an ultramafic/ophiolitic component to the mineralisation. The role of ophiolites in the hydrothermal mineralisation processes is a new angle that has not been previously considered and could have important applications in future exploration strategies.

[*] under UNSCR 1244.