research, the sewage network had not been yet constructed in Mikepércs, thus the inhabitants collected the sewage in septic tanks. In Mikepércs the tanks usually had not adequate insulation and therefore the majority of the sewage (more than 90% according to our estimations) was emitted into the soil. As there are sandy soils around the settlement the sewage can filter into the soil and reach easily the groundwater level at depth of about 1.5-3 m below ground surface. According to our preliminary expectation, we have detected significant pollution in most of the groundwater wells in Mikepércs, especially concerning orthophosphate, nitrate and ammonium pollutants, which concentrations were much over the hygienic limit value. Besides the watering of animals, sometimes people drink groundwater so we can say that consuming of groundwater can cause both human and animal health risk.

Measure of heavy metal load in the floodplain of the river Tisza

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The quality of the River Tisza is significantly influenced by the industrial activity of Ukraine and Romania. The main problem is the heavy metal pollution which can be in dissolved form in the water or attached to colloidal particles in the sediments. In this paper an investigation of soil samples taken from the floodplain of the river was carried out. Surface samples were collected and profiles were created. As, Cd, Co, Cu, Ni, Pb and Zn concentrations were determined. The results show significant and continuous heavy metal load. ANOVA test was carried out and the metal concentration in the upper layer of the active floodplain is proved to be considerably higher than in the reclaimed side. Regarding copper and zinc, in addition to the total metal content, their percentage available for plants (Cu and Zn percentages measured in the Lakanen-Erviö solution) is also more in the active floodplain than in the reclaimed side (copper: 27%, zinc: 47%). Discriminance analysis can identify the location of the soil samples (correlate to the levee) with 92% accuracy. Soil profile shows increased heavy metal loads in the top layer of the soil and proved that the accident in 2000 was not the only pollution occurrence. Based on the results we came to the conclusion that the pollution comes constantly with the sediments from the over arm of the River Tisza and its tributaries.

The role of the time factor in the hydrothermal metallogenesis related to the Neogene volcanism in the Carpathian-Pannonian Region

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Sudbuction-related terrestrial igneous/volcanic environments provide one of the most favorable conditions for hydrothermal ore genesis as recorded by world-class volcanic-hosted

deposits along active and collided continental margins. A number of key factors related to magmatic/volcanic activity contribute to the effectiveness of those environments in concentrating metals present at low contents in large volumes of magma and/or country rocks within smaller volumes of high-concentration ore bodies. Such factors invariably include the presence of persistent and focalized heat-sources fueling the "hydrothermal engine" by hydrous fluid circulation in the shallow crust leading to metal extraction, transport and concentration through time. Here we focus on the role of the time factor in controlling both heat-source persistency and metal availability in the Neogene volcanic areas of the Carpathian-Pannonian Region (CPR). Based on K-Ar geochronology (> 1400 data), patterns of time-space evolution of Neogene volcanism and ore mineralization in CPR have been identified in both the back-arc part of the orogenic system and the fold-and-thrust arc, as follows.

1. In the back-arc intra-Carpathian region petrochemistry of volcanism has evolved in the order: felsic calc-alkaline, intermediate-acidic and then alkaline. The total duration of volcanic activity is about 20 Ma (from 21 to < 1 Ma), however, ore fertile stages are clearly related to the intermediate-acidic volcanism which has more restricted time span starting at around 17-14 Ma and lasting to about 5-7 Ma in different areas. The most striking observation is that the major stage of ore deposition occurred in a relatively narrow time interval between 11 and 14 Ma. Localization of major ore deposits are controlled by regional fault systems interacting with evolved volcanic structures. These ore deposits mostly represent differentially eroded parts of deep-seated intrusion-related low-sulfidation type epithermal systems in their exposures. The exception is the Apuseni Mts. where an additional younger ore stage with Cu (-Au) porphyry ores occurred at 9 Ma in relation to emplacement of shallow andesitic intrusions.

2. In the Carpathian arc portion of CPR two evolution patterns can be distinguished:

2a. a slowly migrating (from west to east) persistent ca. 700 km long intermediate/felsic calc-alkaline magmatic arc from Eastern Moravia to Bârgău Mts., in the 15-7 Ma time range. Ore deposition occurred in the southeastern part of the arc, again in a relatively narrow time interval between 8 and 11 Ma. Localization of these ore deposits are mostly controlled by shallow andesitic intrusions.

2b. a transient, fast-migrating (from north-west to south-east) volcanism along the ca. 160 km long Călimani-Gurghiu-Harghita (CGH) range in the East Carpathians (11- < 0.05 Ma) without important ore mineralization.

In general, duration of magmatic activity in individual areas is particularly significant if taking into account a "magmatic focusing factor" (i.e. duration of magmatism weighted by occurrence area of its products): longer-lasting magmatism in a smaller area both in the groups of 1 and 2a results in higher ore productivity as compared to shorter-lasting and/or larger occurrence area magmatism in the 2b group. On the other hand, regional scale fault systems related to the back-arc tectonism as long-living controlling factors (group 1), as well as occurrences of shallow intrusions as short-living local factors appear to be also important in defining ore mineralization (group 2). Post-mineralization uplift/subsidence related to the Carpathian collision and basin inversions defines erosion levels in different areas and thus ore types (from shallow epithermal to porphyry levels) observed in exposures.

Fissure caves and other gravitationally-induced discontinuities detected by 2D electrical resistivity tomography - case studies from flysch Carpathians (CZ, PL, SK)

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Fissure caves as one of the types of the subsurface dislocations can represent initial forms of the gravitational disintegration of rock massif ranging from shallow to deep-seated (>40 m) gravitational slope deformations. Occurrence of pseudokarst forms, such as crevice-type caves, trenches, escarpments, tension cracks or sinkhole-type depressions is frequent in