formation, i.e. the initiation of the Prespa Basin occurred well before the formation of the Ohrid Basin.

The stable isotopic composition of cryptocrystalline magnesite occurrences in Turkey and Austria and implications for their origin

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Cryptocrystalline magnesite occurs predominantly in ultramafitic rocks of ophiolite sequences and associated sediments. Two types are recognized, the Kraubath type (KT), which occurs – tectonically controlled – in ultramafic rocks as veins, networks and zebra ore, and the Bela Stena type (BST), which occurs as nodules and layers in sediments.

The two types not only differ by the nature of their host rock but also by their C and O isotopic composition. The KT has lower C isotope values (-18 to -6‰ VPDB) than the BST (-1 to +4‰ VPDB). $\delta^{18}O$ values of both types overlap, whereby the KT shows a tendency to lower values (+22 to +29‰ VSMOW) than the BST (+26 to +36‰ VSMOW).

This study is based on extensive fieldwork and a total of 320 samples from Austria (Kraubath) and Turkey (western and eastern Anatolia).

Kraubath (Austria) contains the lowest C isotope values (-22.5 to -11.3‰ VPDB). Turkish KT magnesite contains higher C isotope values (-12.7 to -3.1‰ VPDB). Turkish BST magnesite contains mainly positive C isotope values (+1.5 to +6.9‰ VPDB) with the exceptions of Dutluca and Bahtyiar (Eskişehir/Western Anatolia)

In the operated magnesite deposit of Dutluca (Eskişehir/Turkey) KT magnesite and zebra ore (-10.6 to -7.8‰ VPDB) are covered by sediments with BST magnesite, which occurs as nodules and layers (-6.5 to -5.8‰ VPDB).

The deposit of Bathyiar (Eskişehir/Turkey) shows a transition from network to iron-rich zebra ore and BST. The network shows normal isotope values, but the $\delta^{18}O$ values of the zebra ore are extraordinary high (+29 to +35‰ VSMOW).

The $\delta^{18}O$ values of KT magnesite suggest general formation temperatures between ca. 60 and 70°C. Exceptions are the deposits of Tavşanlı/Turkey, which formed at temperatures of ca. 80°C. Zebra ore of Bathyiar (Eskişehir/Turkey) formed at temperatures below ca. 30°C.

The range of the $\delta^{13}C$ values (-22.5 to +6.1‰ VPDB) suggests that CO_2 was derived from several sources (biogenic – atmospheric, decarboxylated, mantle-derived or magmatogene) and was transported by meteoric waters. Supergene water with dissolved HCO_3^- invaded the serpentinite and leached Mg^{2+}. The release of Mg^{2+} and OH^- into the solution raised the pH. Extension of strike-slip system provided pathways for migration and the formation of hydrothermal convection cells. At shallow levels the drops in pCO_2 due to outgassing caused supersaturation and formation of magnesite.

The Tokaj Mts. obsidian – its use in praehistory and present application

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Homogeneous acid volcanic glass of low water content has been an object of human attention since the prehistory. There exist archaeological evidences dealing with the use of obsidian from the Tokaj Mts. (eastern Slovak Republic and the north-eastern part of Hungary, as well) Late Tertiary volcanic province in the Late Palaeolithic. There at present exist

attempts to use it as a jewellery raw material. Obsidian namely in combination with silver, nickel alloys and gold can be effectively used as a modern jewellery material.

Dating of the landslide activity in the Czech part of the Outer Western Carpathians and its palaeoenviromental significance

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The Outer Western Carpathians characterised by flysch structure are prone to the development of various types of slope deformations. Landslides are typical and abundant phenomena of this mountain relief. The study brings new information on the predisposing factors for landslide evolution in the studied area and it focuses on the time constrains of these slope deformations during the Holocene. The interrelationship between slope deformations and fault-induced weathering as a preparatory factor for the development of sliding has been analysed in several case studies from the Western Carpathians in the Czech Republic. The study area comprises flysch nappes with alternating sandstone and shale of different permeability. These lithological structures are affected by systems of faults. Recurring slope instability is found as associated with zones of deep weathering in tectonically weakened areas. Climatic variability of landslide activity during the Holocene can be identified by means of radiocarbon dating and pollen analysis. The age of landslide evolution is analysed by radiocarbon dating of sediments preserved in selected places of the deposition: near-scarp depressions, inter-colluvial depressions, landslide dammed-lakes, and organic material buried under the landslide body. Using this sampling strategy we were able to establish landslide chronology in the studied area. By means of pollen data sets we can analyse palaeoenvironmental conditions of the studied areas and bring new light into the predisposing and triggering factors. Areas affected by recurring landslides suggest both gradual and cyclic landslide frequency. We determined the following landslide phases within the studied area: Older Dryas – Allleröd, Boreal, AT1, AT2/AT3, AT4/SB1, SB2/SB3, and SA1/SA2. The first very important phase is identified with the turn of the Last Glacial (Kotelnice landslide, 11813±383 ^{14}C BP). This phase is connected with crucial environmental changes at the end of the last glacial period. Cyclic landslide frequency was confirmed in the case of complex landslide areas (e.g. Velká Čantoryje landslide). A highly fragmented zone of overthrust sandstone-dominated nappe, which lies on a weathered claystone-dominated sequence, contains numerous multiple rotational slides. Basal peat bog deposits situated in the vicinity of the main scarp depressions of these landslides show minimal ages of 3540±80 ^{14}C BP to 3680±350 ^{14}C BP (late Subboreal) and a further reactivation in approximately 2400±70 ^{14}C BP to 2890±90 ^{14}C BP (Subatlantic). Recent (rather minor) mass movements have occurred only sporadically throughout the last 100 years (e.g. during an event in July 1997). Another example is connected with the evolution of a catastrophic rockslide of Mt Ropice. The first event occurred at 1450±100 ^{14}C BP (Subatlantic age of a basal sediment layer of a former landslide-dammed lake). Another smaller flow-slide (identified on the basis of a change in sedimentation within the impoundment) probably postdated 310±60 ^{14}C BP. Special attention was paid to the research of the palaeoenvironmental significance of landslide dammed-lakes. Radiocarbon dating together with palynological and sedimentological analyses detected repeated changes in depositional conditions connected with the palaeoenvironmental changes during the Holocene. Results of the radiocarbon dating of the basal parts of lake sediments show that landslides causing the valley damming originated throughout the whole Holocene with significant increase in the landslide activity in the Subatlantic chronozone. Linear lake sedimentation rates and minimum average catchments denudation for selected contributing catchments in different time spans were calculated in order to understand the relief development dynamics throughout the Holocene. Minimum mean mechanical denudation of landslide-dammed catchments varies between 2.5-13.4 mm.ky-1.