



Late-Quaternary Speleothem Records from the Balkan Peninsula – Potential, Objectives and First Results

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Mid-latitude speleothems often contain detailed, high-resolution records of local and regional interglacial climate changes. Many speleothem records of Holocene (MIS 1) and Eemian (MIS 5e) climate evolution have been investigated, but there is very little work being done in the Balkan region, despite the fact that the area is very rich in limestone caves with speleothems. We are investigating speleothems from the Western Balkan Peninsula that are likely to contain one of the most detailed, high-resolution records of local and regional interglacial climate changes in Southeast Europe. By example of a stalagmite collected in Vernjikica Cave, Serbia (Carpatho-Balkans), the project's potential to address important aspects of paleoclimatic research in the Mediterranean realm is discussed.

The first studied, fine-laminated calcite stalagmite is about 50 cm tall and extends conically from the base to the top, presenting at least two visible growth discontinuities. Four preliminary uranium-series ages ($^{234}\text{U}/^{230}\text{Th}$) constrain the general period of growth to MIS 5d to MIS 5b. Preliminary results suggest that the stable oxygen isotope profile obtained from the axial zone largely reflects the unaltered isotopic composition of the cave drip water. The observed shifts in the isotope records display long-term changing climate conditions from temperate warm and humid conditions to relatively colder and drier conditions. High-amplitude oscillations superimposed on this trend are interpreted as short warm and dry intervals during which calcite precipitation is primarily affected by non-equilibrium conditions. In light of modern climate in the region, these findings suggest that the proxy record primarily reflects a shift in precipitation regimes that in turn may be linked to the long-term seasonal displacement of the subtropical high-pressure ridge and its seasonal duration.