

How warm were summers during the LGM in the southeastern Carpathian Basin?

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In this study, we compare two independent approaches for the reconstruction of summer air temperatures during the last glacial maximum (LGM) in the southeastern Carpathian Basin. We present results of numerical modeling and July paleo temperatures based on identified land snail assemblages from loess sequences. Those two approaches are, moreover, compared with more widely used proxy data for loess sections, such as environmental magnetism, grain size, and geochemical indices.

The results show that the July malacopaleothermometer provides relatively high July temperatures comparable to present day conditions, indicating consistently higher summer air temperatures than reconstructions based on numerical modeling experiments for the LGM in the Southeastern Carpathian Basin. Numerical modeling experiments related to six different models used in this study show 6.2 °C to 2.5 °C colder July air temperatures than recently measured equivalent temperatures. From a spatial point of view, our investigations confirmed that LGM conditions in the southeastern Carpathian Basin are indicating a notable increasing Northwestern-Southeastern gradient in temperatures.