The last 30,000 to 600,000 years ago: unravelling the timing of human settlement for the Palaeolithic site of Kozarnika.

Maryam Heydari, Guillaume Guérin, Nikolay Sirakov, Philippe Fernandez, Catherine Ferrier, Aleta Guadelli, Jean-Claude Leblanc, Stanimira Taneva, Svoboda Sirakova, Jean-Luc Guadelli

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Kozarnika cave is a renowned prehistoric site in the Balkans. It contributes significantly to our understanding of the human past due to its rich assemblages associated with the Lower to Upper Palaeolithic periods. The cave was first mentioned in the prehistoric survey carried out before 1953. Years after, in 1976, the site was excavated systematically by Bulgarian-French researchers [1].

Various chronological dating methods have been employed alongside the excavation to unveil the timing of humans’ occupation in Kozarnika.

This study presents our contribution of employing luminescence-dating methods (OSL, IRSL, pIR-RSL, VSL, IR-RF) to unravel the reliable timescales for several geological units and archaeological assemblages. A vast body of techniques has been put together, enabling us to date sediment samples containing the assemblages attributed earlier to the Upper, Middle, and Lower Palaeolithic periods [3,5].

Our results show that the inhabitants of Kozarnika occupied that region from ca. 30 to 600 ka, showing general accordance with the previous dating.

The luminescence-based chronology at Kozarnika’s cave covers 30 to 600 ka.

The overall accordance between the OSL with the pIR-RSL ages for the upper part of the sequence makes it likely that both signals were completely bleached before mineral deposition.

Muttoni et al. (2017) [6] assigned the Brunhes–Matuyama reversal (780 ka) to the layer beneath 13c, using Paleomagnetic dating. VSL in combination with MAAO protocol resulted in ages consistent with the reversals.

The independent age available for layer 13a-c (with the range of 600–750 ka) also might indicate that the IR-RF ages represent the minimum age for the layers.

References

Unravelling the timing of human settlement for the Palaeolithic site of Kozarnika using multiple luminescence-dating methods

Maryam Heydari1,2,a, Guillaume Guerin1,2,a, Nikolay Sirakov1, Philippe Fernandez1, Catherine Ferré1, Aleta Guadell2, Jean-Claude Leblanc1, Stanimira Taneva1, Svoboda Sirakov1, Jean-Luc Guadell2

1School of Earth & Environment, University of Leeds, Leeds, LS2 9JT, UK
2Univ. Rennes, CNRS, Géosciences Rennes, UMR 6118, 35000 Rennes, France

*a Corresponding author: maryam.heydari@geologie.uni-freiburg.de

Introduction

Kozarnika cave is a renowned prehistoric site in the Balkans. It contributes significantly to our understanding of the human past due to its rich assemblages associated with the Lower to Upper Palaeolithic periods. The cave was first mentioned in the prehistoric survey carried out before 1953. Years after, in 1976, the site was excavated systematically by Bulgarian-French researchers [1].

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Optically stimulated luminescence (OSL)

The equivalent (\(\frac{\gamma}{\text{Gy}}\)) concentration was determined from the top (pre-\(\gamma\)) and the bottom of the charcoal OSL signals. Hence, the luminescence-based chronology at Kozarnika’s cave covers 30 to 600 ka.

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