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Ormagi Ekhi (Georgia) and Middle Palaeolithic occupations in South Caucasus

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New excavations at Ormagi Ekhi in Georgia have revealed long-term hominin occupations during the Middle Palaeolithic (260–45 ka cal BP). Here, the authors present an overview of data from multidisciplinary analyses of the site, highlighting its potential for widening our understanding of hominin occupations in the South Caucasus.

Keywords: Western Europe, Middle Palaeolithic, radiocarbon, OSL, techno-typology, settlements

Introduction

The Georgian Middle Palaeolithic (South Caucasus) covers a long timespan, attested by the early Middle Palaeolithic site of Djrchula (260–140 ka; Meignen & Tushabramishvili 2010; Mercier *et al.* 2010) and the late Middle Palaeolithic sites of Ortvale Klde (*c.* 47.5–44.2 ka cal BP, Adler *et al.* 2006; Cullen *et al.* 2021) and Bondi Cave (*c.* 45 ka cal BP, Pleurdeau *et al.* 2016). These sites demonstrate a wide variety of technological strategies; formerly grouped into four facies based on regional typological criteria (Tushabramishvili 1984), the greater techno-typological diversity and variability of lithic assemblages in the South Caucasus is becoming increasingly recognised (Pleurdeau *et al.* 2007). To assess this diachronic diversity and variability, as well as technical changes over time, special attention is being given to Ormagi Ekhi.

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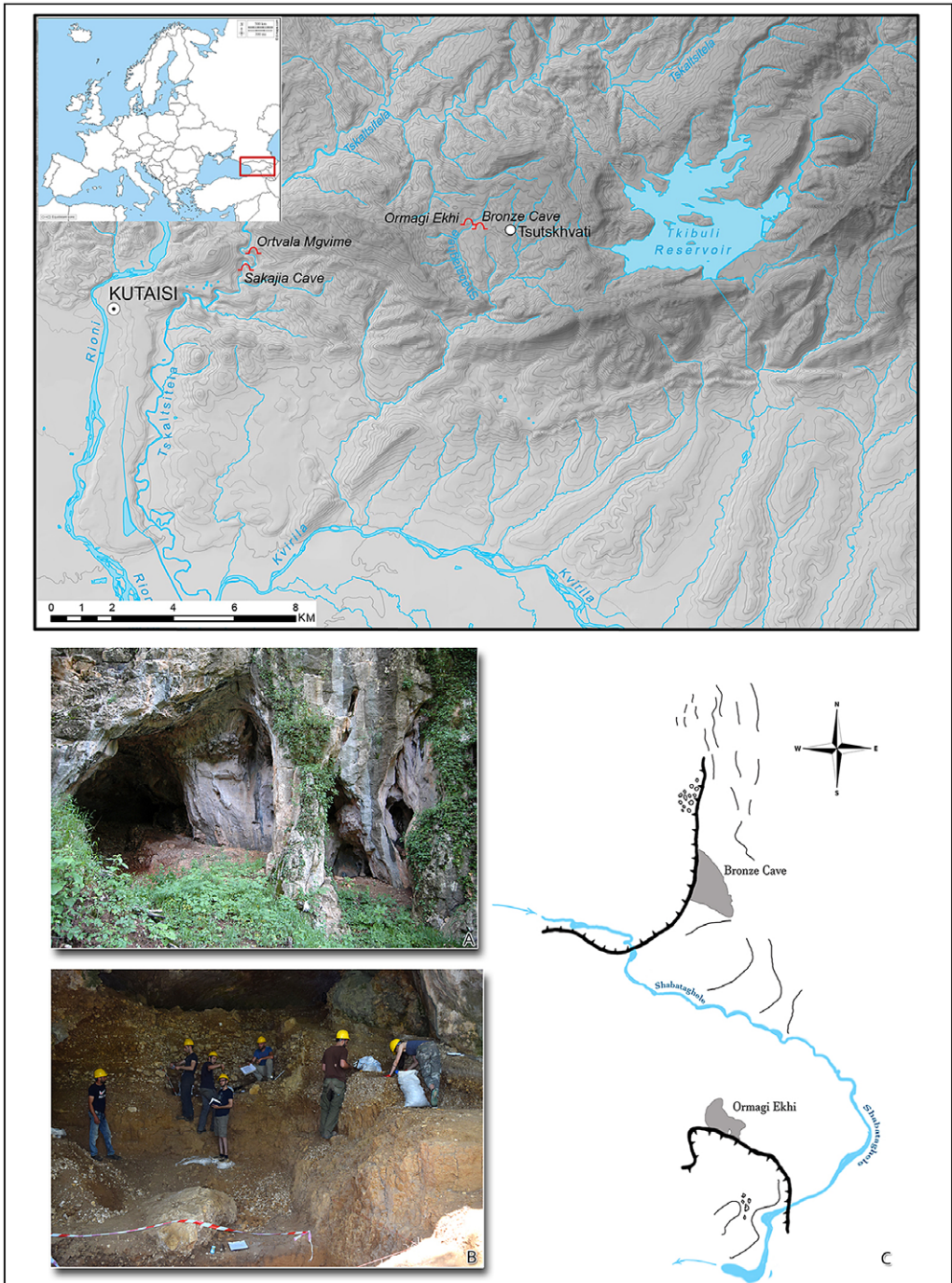


Figure 1. Map showing the location of Ormagi Ekhi, with detail of archaeological work (A & B) and the simplified topographic map of the Tsutskhvati karst system (C) (figure by A. Mgeladze).

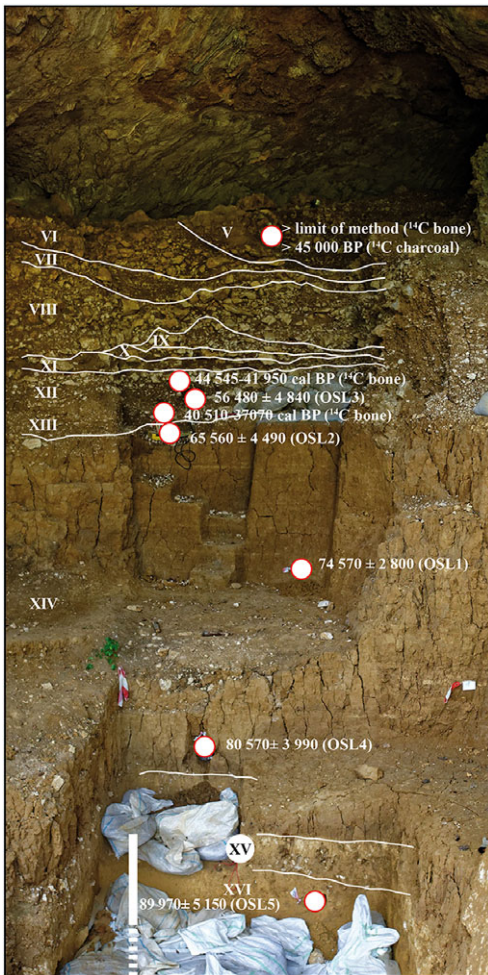


Figure 2. Chronostratigraphy of Ormagi Ekhi (figure by S. Puaud).

the upper layers was sufficient for radiocarbon dating. These three samples, plus an additional charcoal sample, were prepared and dated at Laboratoire Archéologie et Archéométrie (Lyon) and the Laboratoire de Mesure du Carbone 14 (Saclay) with ARTEMIS accelerator, and the dates calibrated using OxCal 4.4, with IntCal20. Six silt samples (layers XII, XIV, XVI) were dated using optically stimulated luminescence (OSL) at the Re.S.Artes laboratory, Bordeaux (Figure 2).

The bones and charcoal date layers XII and XIII to more than 40 000 years cal BP, close to the methodological resolution limit for the radiocarbon method. Layer XII is dated by OSL to *c.* 50–60 ka., while occupations are older than 70 ka in layer XIV and *c.* 90 ka in layer XVI.

This cave, located in western Georgia, is part of the Tsutskhvari karst system (Figure 1). Excavations in 1970–1975 and 1998–1999 by Georgian scientific institutions were followed by further field seasons by a Georgian-Spanish team in 2002 and a Georgian-French team in 2017–2024. These investigations revealed recurrent hominin occupations.

We present here our ongoing research (especially from stratigraphic layers XII, XIII and XVI, the only layers with sufficient archaeological material for in-depth analysis). New chronological data and techno-typological analyses point to substantial extra-regional influences, reshaping our vision of Middle Palaeolithic technological diversity in the region.

Stratigraphy and chronostratigraphy

The stratigraphy of the cave reaches a depth of more than 4.5m, with two main sedimentary units: an upper stony unit with alternate layers of granules and blocks (layers V–XII), and a lower silty unit (layers XIV–XVI).

The collagen content (measured by Fourier Transform Infrared spectroscopy, Lebon *et al.* 2016) of three bones from

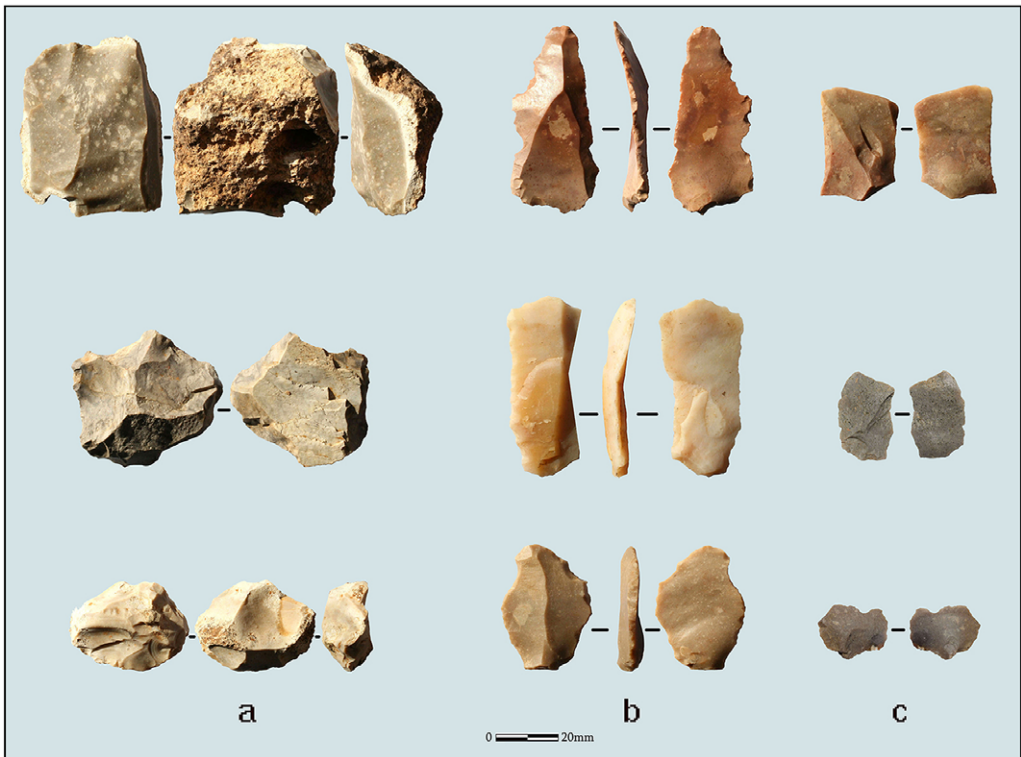


Figure 3. Lithics from layer XIII: a) bidirectional and discoidal cores; b) retouched tools; c) flakes (figure by A. Mgeladze).

Archaeological assemblages

The lithic assemblage from layers XII ($n = 29$) and XIII ($n = 291$) comprises 57 fragments, 68 chips and debris and mainly small to medium-sized flint artefacts (from $<30\text{mm}$ to 80mm long), including 81 wide (width $>$ length) flakes, 26 elongated (length $>$ width) flakes/blades, 16 points, 39 small flakes and 10 bladelets. The core technology consists of 13 unifacial and multifacial ‘flake cores’ with one or more striking platforms and debitage surfaces, and one or more series of removals. There are also three discoid, three Levallois and four lamino-lamellar cores (Figure 3). Most of the byproducts are not retouched. The few retouched tools include notches and denticulates, burins, points, flakes and blades (Figure 3). The lithic assemblage (cores, predetermined and maintenance flakes, byproducts, cortical pieces) attests to *in situ* production; butchery marks on associated bone fragments indicate possible *in situ* use. The lithic assemblage of the underlying layer XVI ($n = 62$, including fragments, chips and debris) is made on flint and quartzite-sandstone and can be organised into two categories. The first consists of 18 unretouched small ($<30\text{mm}$ long) and medium-sized ($30\text{--}80\text{mm}$) flakes, pointed blades and points ($30\text{--}80\text{mm}$). The second consists of five large flakes/blades and pointed blades over 90mm long, including one retouched blade (Figure 4). Despite the absence of

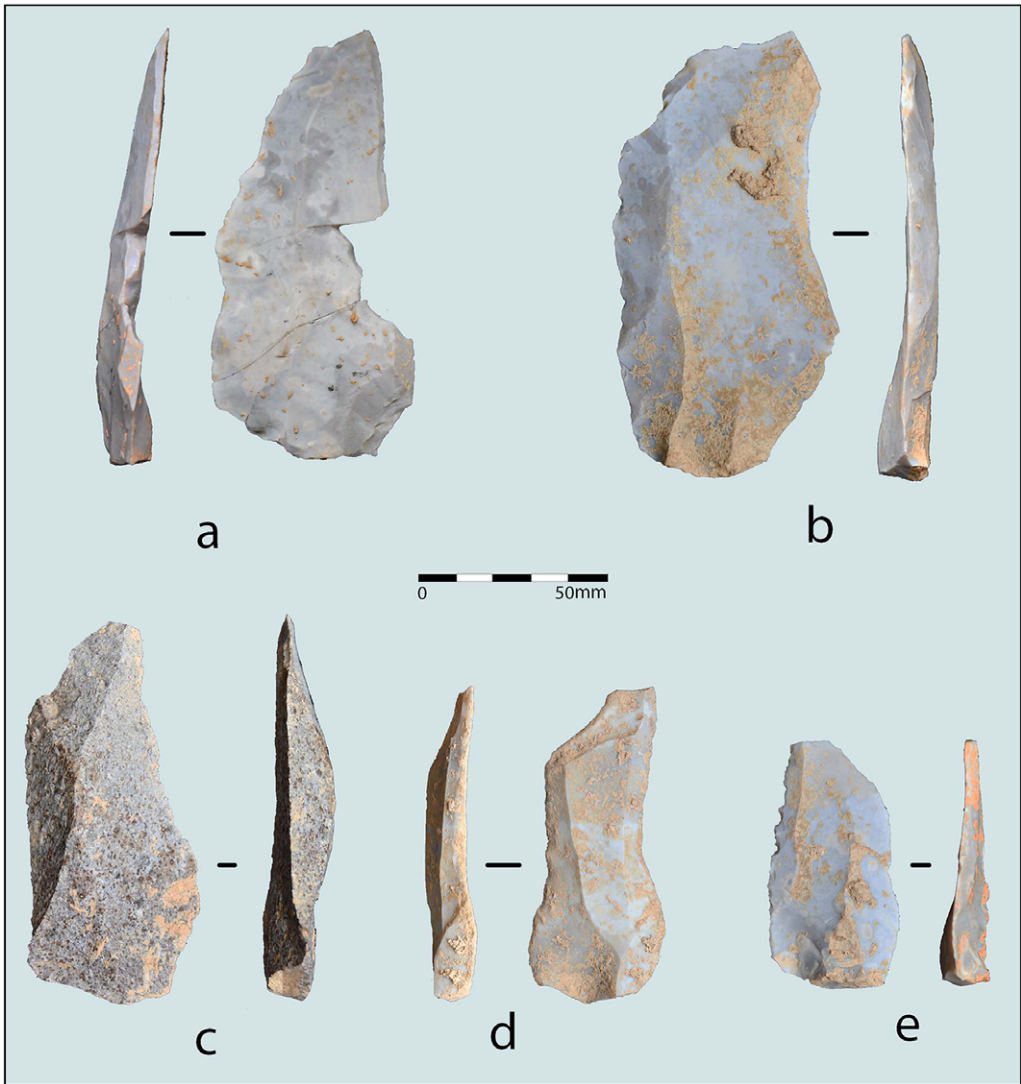


Figure 4. Lithics from layer XVI: a) Levallois point; b & d) Levallois flakes; c & e) converging-edges flakes (figure by S. Bonilauri).

cores in the series, the production is mainly Levallois (unidirectional, bidirectional, centripetal). Differences between the lithic assemblages and the nature of raw materials from layers XII, XIII and XVI, which can all be attributed to the Middle Palaeolithic, could suggest either a shift in activities on site or the presence of distinct techno-cultural entities (late/early Middle Palaeolithic).

Cave bears are predominant in faunal assemblages throughout the sequence, particularly in layers XII, XV and XVI. Faunal remains are especially abundant in layer XIII



Figure 5. Butchery marks on a fragment of long bone diaphysis from a medium-sized herbivore found in layer XIII (figure by S. Prat).

($n = 5688$), with 242 bones identifiable taxonomically at least to genus, and 111 anatomically (bone element) determined remains. *Capra* cf. *caucasica* (West Caucasian tur), *Bison* cf. *priscus* (steppe bison) and *Cervus elephas* (red deer) are the main prey species identified. Ormagi Ekhi was a hibernation site for cave bears but was not used as a den by other carnivores. Humans are solely responsible for the accumulation of ungulate bones, indicated by fractures on fresh bone, butchery marks and burnt bones (Figure 5).

Implications for the Middle Palaeolithic in South Caucasus

Preliminary data from new fieldwork and analyses at Ormagi Ekhi reveal techno-typological diversity between layers XII and XIII—corresponding to Mousterian facies that may be related to the Tsutskhvat-type facies (e.g. Tushabramishvili 1984)—and layer XVI. Layer XVI (dated to *c.* 90 ka) is characterised by the production of a large-blade component. This layer shares common technological features with lithic assemblages attributed to the Djruchula-Koudaro group, and particularly with the Djruchula cave assemblages, dated to *c.* 250 ka (Meignen & Tushabramishvili 2010; Mercier *et al.* 2010). The lithic assemblage from layer XVI also seems to share some common technological features with the Levantine early Middle Palaeolithic laminar industries (e.g. from Hayonim Cave E & Abou-Sif C–D), dated between 270 ka and 160 ka (Mercier *et al.* 2010), and assemblages from the Iranian Central Plateau (e.g. Qaleh Kurd Cave: QK1-3 ranging from 205 ± 15 to 165 ± 11 ka; Vahdati Nasab *et al.* 2024). The discovery of a laminar component at Ormagi Ekhi highlights some affinities with the early Middle Palaeolithic of surrounding areas, suggesting relationships with groups to the south, associated with the persistence of local traditions (the Djruchula group for instance).

Initial results show that Ormagi Ekhi is a new key site for the long-term understanding of the occupation of the South Caucasus by hominin groups during the Middle Palaeolithic, highlighting potential links with southern outlying regions. Ongoing investigations will enhance these results.

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