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Research Article

A fortified Early Bronze Age settlement in the Southern Caucasus

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Despite intensive study, the socioeconomic and political structuring of the Southern Caucasus Kura-Araxes cultural tradition remain poorly understood. Here, the authors explore the results of integrated geophysical survey and excavation at Artanish 9 in the Lake Sevan highlands (Armenia). They document a small, densely built site enclosed by monumental walls—an anomaly in highland Kura-Araxes settlement systems—offering new insights into sociopolitical diversity. Through examination of spatial organisation, architecture and storage facilities, Artanish 9 reveals the adaptive strategies of highland communities and the complexity of Early Bronze Age settlement systems in the Southern Caucasus.

Keywords: Eastern Europe, Lake Sevan, Kura-Araxes, geophysical prospection, mountain landscapes, fortified settlement

Introduction

The Kura-Araxes cultural tradition of the Early Bronze Age (*c.* 3500–2500 BC) is among the most intensively studied archaeological phenomena in the South Caucasus (Sagona 1993; Kushnareva 1997; Palumbi & Chataigner 2014; Badalyan & Perello 2024; Batiuk *et al.* 2022). Although characterised by a relatively uniform material culture, extending from the central Caucasus to the Levant, many aspects remain poorly

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understood due to the concentration of research on a limited number of sites, the restricted visibility of Early Bronze Age contexts within multiperiod settlements (Badalyan *et al.* 2008: 48) and a predominant emphasis on material manifestations of culture. Consequently, and despite good documentation of the distinctive artefactual repertoire of the Kura-Araxes tradition, the socioeconomic and political structures of these communities at both micro- and supra-regional levels remain insufficiently explored (Smith 2005).

This article presents new data from a Kura-Araxes settlement on the north-eastern shore of Lake Sevan (Armenia), a region that, until recently, represented a lacuna in archaeological research (Bobokhyan & Kunze 2021). We employ a comprehensive, multidisciplinary approach, combining near-complete geophysical coverage of an Early Bronze Age settlement with excavations and landscape-archaeological analysis of the surrounding area to provide fresh insights into the spatial behaviour and social dynamics of the community inhabiting the region.

Several features of the settlement diverge from the traditional Kura-Araxes model, which typically portrays groups as small, village-based and agro-pastoralist with limited sociopolitical centralisation (Palumbi & Chataigner 2014: 253). The discovery of massive fortification walls—identified via ground-penetrating radar (GPR) and confirmed by excavation—at a site measuring only 0.6ha, indicates a co-ordinated communal effort inconsistent with prevailing interpretations of social organisation during the Early Bronze Age. This monumental architecture, along with other spatial features of the Lake Sevan area, underscores the political, social and possibly economic diversity within the broader Kura-Araxes sphere.

Regional variations during the Early Bronze Age in the Southern Caucasus

The Kura-Araxes cultural tradition—named after the two main rivers that define its core region—is known for its distinctive, highly burnished pottery (Smith *et al.* 2009; Kosyan *et al.* 2022; Badalyan & Perello 2024). This ceramic tradition first appeared in the Southern Caucasus around the mid-fourth millennium BC, particularly in highland and mountainous zones. Its emergence is often linked to increasing pastoralism and settlement in higher altitudes, likely facilitated by a shift to a warmer, wetter climate around 3500 BC (Sagona 1993; Connor & Kvavadze 2014). By the early third millennium BC, the tradition had expanded, encompassing modern-day Dagestan, Georgia, Armenia, Azerbaijan, northern Iran and north-eastern Türkiye.

Other markers of cultural homogeneity include metallurgical practices, central hearths, zoomorphic and anthropomorphic ‘totems’, domestic architecture, dispersed settlement patterns and burial traditions (Kushnareva 1997; Palumbi & Chataigner 2014). These shared traits are typically interpreted as indicative of relatively egalitarian societies centred on extended households, in contrast to the hierarchical structures of the succeeding Middle Bronze Age (c. 2500–1500 BC).

Nevertheless, regional diversity became increasingly evident during the Early Bronze Age (Areshian 2005). The early Kura-Araxes I phase (KA1, *c.* 3500–2900 BC) displays relative ceramic uniformity, though architectural differences are observable between highland and lowland settlements, possibly tied to seasonal mobility and varying permanence (Sagona 1993). The subsequent Kura-Araxes II phase (KA2, *c.* 2900–2500 BC) shows greater differentiation in both material culture and settlement patterns (Kohl 2009; Rothman 2016; Badalyan & Perello 2024). At the end of KA2 sites were abandoned or relocated, sometimes over earlier burial grounds, and regional ceramic styles diverged (Rova 2014).

The causes of this diversification remain debated, with potential factors including the formalisation of local economies centred on increased metallurgical production and a lack of inter-regional exchange. Broader interactions, including conflict or assimilation with incoming groups during the later third millennium, likely contributed to the abrupt cultural transformations that define the Middle Bronze Age. Known primarily from kurgan burials, Middle Bronze Age communities are often considered more mobile, though this assumption is complicated by the scarcity of securely identified settlements.

In this broader context, the region north and east of Lake Sevan offers a valuable case study. Though relatively isolated from Kura-Araxes centres in the Ararat Plain and Aragats highlands, this area may have been well connected as it lies near the gold-rich Sotk region and the main corridor linking Lake Sevan with the eastern Caucasus (Figure 1). South of the lake, prior Armenian-Italian research identified a sequence of prehistoric sites, including Kura-Araxes occupations (Biscione *et al.* 2002, 2024), while cyclopean-walled Late Bronze Age (*c.* 1500–1150 BC) and Iron Age (*c.* 1150–600 BC) settlements in the Geghama Mountains suggest long-standing connections to mineral sources and highland transport routes in later phases (Simonyan *et al.* 2022). The narrow north-eastern Lake Sevan corridor, especially around the Artanish peninsula, provides passage between lake and mountain zones and remains strategically important today, linking the Sotk mines with lowland processing centres near Yerevan.

The north-eastern Lake Sevan zone and the Sotk area

Until recently, the north-eastern Lake Sevan zone did not appear on distribution maps of Kura-Araxes sites (e.g. Badalyan 2014: fig. 3). Systematic surveys, conducted by the Armenian-German Ushkiani Project in the Sotk region (2011–2013) and around Artanish (2019–2024), showed that this lacuna reflected a research gap rather than a true lack of occupation (Bobokhyan *et al.* 2017; Bobokhyan & Kunze 2021). The project documented continuous human activity from the Early Bronze Age to the Middle Ages (seventh–thirteenth centuries AD), with particularly intensive Bronze Age settlement likely linked to the exploitation of local gold deposits.

The multiperiod site of Sotk 2, investigated through surveys and targeted excavations between 2011 and 2013, emerged as a probable central place within a prehistoric mining zone. Its total settled area covers approximately 4.5ha, with an upper, enclosed plateau of 0.5ha. Initial occupation dates to the KA1 phase, intensifies during the KA2 and

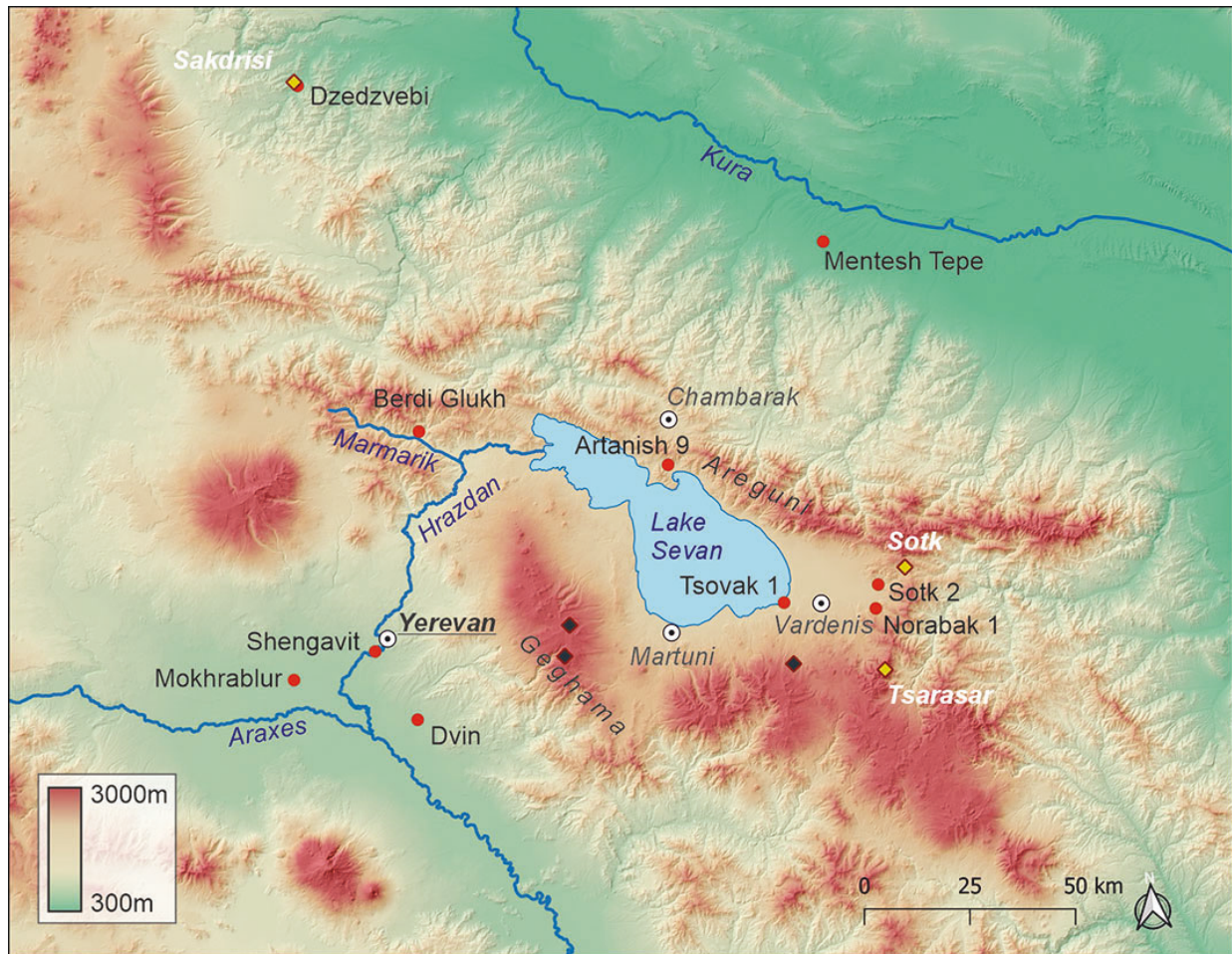


Figure 1. The Armenian Plateau in the Lesser Caucasus with Lake Sevan and the main rivers shown. Early Bronze Age sites mentioned in the text are indicated with red dots; gold and obsidian sources with yellow and black diamonds, respectively; modern towns with dotted white circles (basemap: Mapzen Global Terrain; figure by authors).

continues into the Middle–Late Bronze Age and Iron Age. This continuity is rare for the Southern Caucasus, where Middle Bronze Age settlements are often elusive. Initial fortification at Sotk 2 dates to the final Middle Bronze Age phase and overlies Kura–Araxes layers (Kunze *et al.* 2013: 58). Its longevity suggests an economic role centred on stable access to valuable natural resources. While gold is the most likely driver, the artefact assemblage indicates that nearby copper and obsidian sources were also exploited.

Sotk remains the largest known gold deposit in the Caucasus, with an estimated 124 tonnes embedded in quartz-carbonate veins (Kunze *et al.* 2023). Ancient mining evidence—partially destroyed by modern operations—was recorded during Soviet geological mapping in 1953 and suggests Bronze Age exploitation (Wolf & Kunze 2014: 119). However, a study of 43 rivers and streams in the Gegharkunik province also found placer gold in 25 of them, sometimes in substantial quantities and often from a chemically distinct source in the Tsarasar zone, south-west of the current mine (Kunze *et al.* 2023). Chemical analyses indicate that Tsarasar, not Sotk, was the primary source for Bronze Age gold artefacts.

While the region's rich gold deposits may explain the Early Bronze Age expansion into the Sevan highlands, the archaeological record urges caution. Gold artefacts are rare in Kura-Araxes settlements and burials (Palmieri & Di Nocera 2000: 180; Frangipane 2004; Kalantaryan 2007: 72), suggesting that gold may have been valued more as a trade commodity destined for external regions than a domestic or symbolic material. This situation changes with the Middle Bronze Age, when gold objects become more prominent in archaeological contexts in the Southern Caucasus (Gambaschidze *et al.* 2001: 103; Kalantaryan 2007: 72; Bobokhyan 2008: 76). This trend may already have begun in the late Early Bronze Age (Stöllner 2021), indicating a growing role for metal consumption prior to the more overt social changes of the Middle Bronze Age. Rising demand for metals likely influenced regional economic structures, especially in resource-rich zones. Our current work investigates how such extraction activities were embedded in local communities and reflected in the broader settlement system around Lake Sevan.

Current research at Artanish

Due to ongoing border tensions near the Sotk mine, fieldwork has been limited since 2020. Consequently, the focus of the Ushkiani Project shifted to the lakeside settlements near the modern village of Artanish, first identified during the 2019 surveys (Bobokhyan & Kunze 2021). Located within the narrow corridor between the lake and the Areguni mountains, the Artanish peninsula yielded a sequence of Bronze and Iron Age sites, including burial grounds and fortified hilltop settlements (Figure 2; Bobokhyan & Kunze 2021; Hahn *et al.* 2021; Hovhannisyan *et al.* 2024).

Our current research centres on Artanish 9, a steep, free-standing hill (1940m above sea level (asl)) situated at a strategic bottleneck between the peninsula and the mountain range (Figure 3). The site was inhabited between *c.* 2800 and 2600 BC (radiocarbon dates in Amiryan *et al.* 2024); it features a gently sloping summit plateau and steep northern flanks, with easiest access to the north-west. Its elevated position provides wide views over the coastal flats, as well as the nearby pass. While nearby wetlands (Vanevan) suggest fluctuating hydrology of the surrounding landscape, a sediment core from Lake Sevan's centre shows that the lake level in the Early Bronze Age was comparable to today (about 1900m asl), placing Artanish 9 approximately 2.2km from the water's edge (Robles *et al.* 2022; Haberzettl *et al.* 2024). This setting, along with expanding upland pastures during a slightly arid climatic phase *c.* 3150–2550 BC, likely enabled the settlement of both highland zones and coastal areas north of Lake Sevan during the late Early Bronze Age.

Our research seeks to understand how Artanish 9 functioned within this highland system, particularly in relation to the regional exploitation of metals and natural resources. By combining non-invasive survey methods and excavation, we aim to reconstruct the site's internal layout and assess its role in the wider socioeconomic networks around Lake Sevan.

Geophysical surveys were conducted in three campaigns: August 2022, July 2023 and July 2024 (Figure 4; technical details in the online supplementary materials). The initial

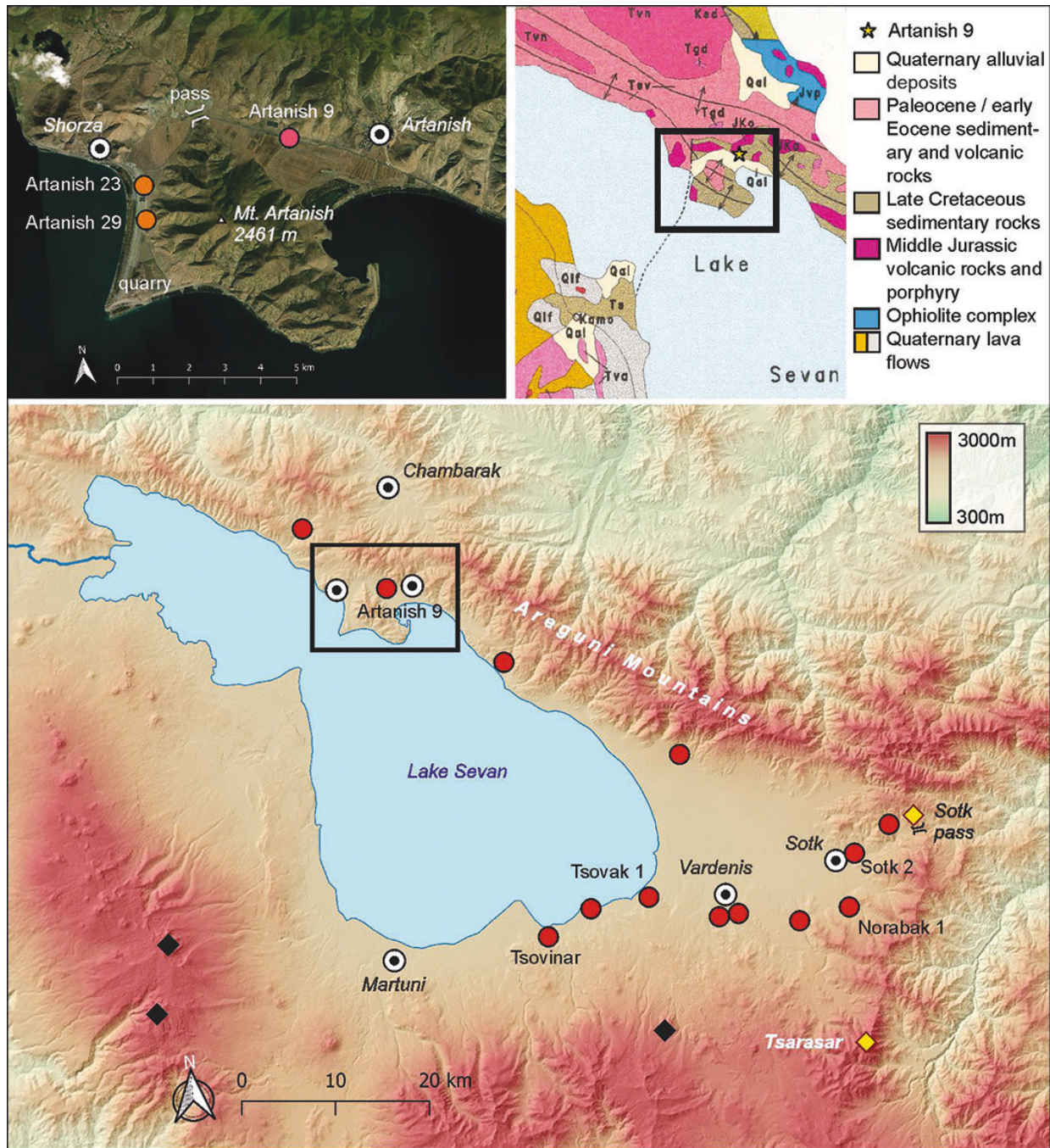


Figure 2. Lake Sevan and the Artanish peninsula: top left) Bing satellite imagery of the Artanish peninsula showing the locations of modern villages and archaeological sites mentioned in the text (yellow: Early Bronze Age; orange: Iron Age); top right) detail of local geology (after Maldonado & Castellanos 2000); bottom) the eastern Lake Sevan area, showing the locations of Early Bronze Age sites (red dots), modern towns (dotted white circles), gold deposits (yellow diamonds) and obsidian outcrops (black diamonds) (figure by authors).

campaign focused on mapping the plateau using magnetic gradiometry and targeted ground-penetrating radar (GPR; Figure 5), which demonstrated good resolution of structural remains, prompting full-coverage GPR campaigns in 2023 and 2024 (Ullrich *et al.* in press). The results reveal internal spatial organisation and wall alignments across the plateau (Figure 6).



Figure 3. The hill of Artanish 9 viewed from the south-east. To the right is the main road, in the background the Artanish pass (photograph by W. de Neef).



Figure 4. Geophysical methods in use at Artanish 9; left) magnetic gradiometry (2022); centre) GPR (GSSI SIR with single 400MHz antenna, 2022 & 2024); right) GPR (PulseEko Spidar bistatic system with two 250MHz antennas, 2023) (figure by B. Ullrich).

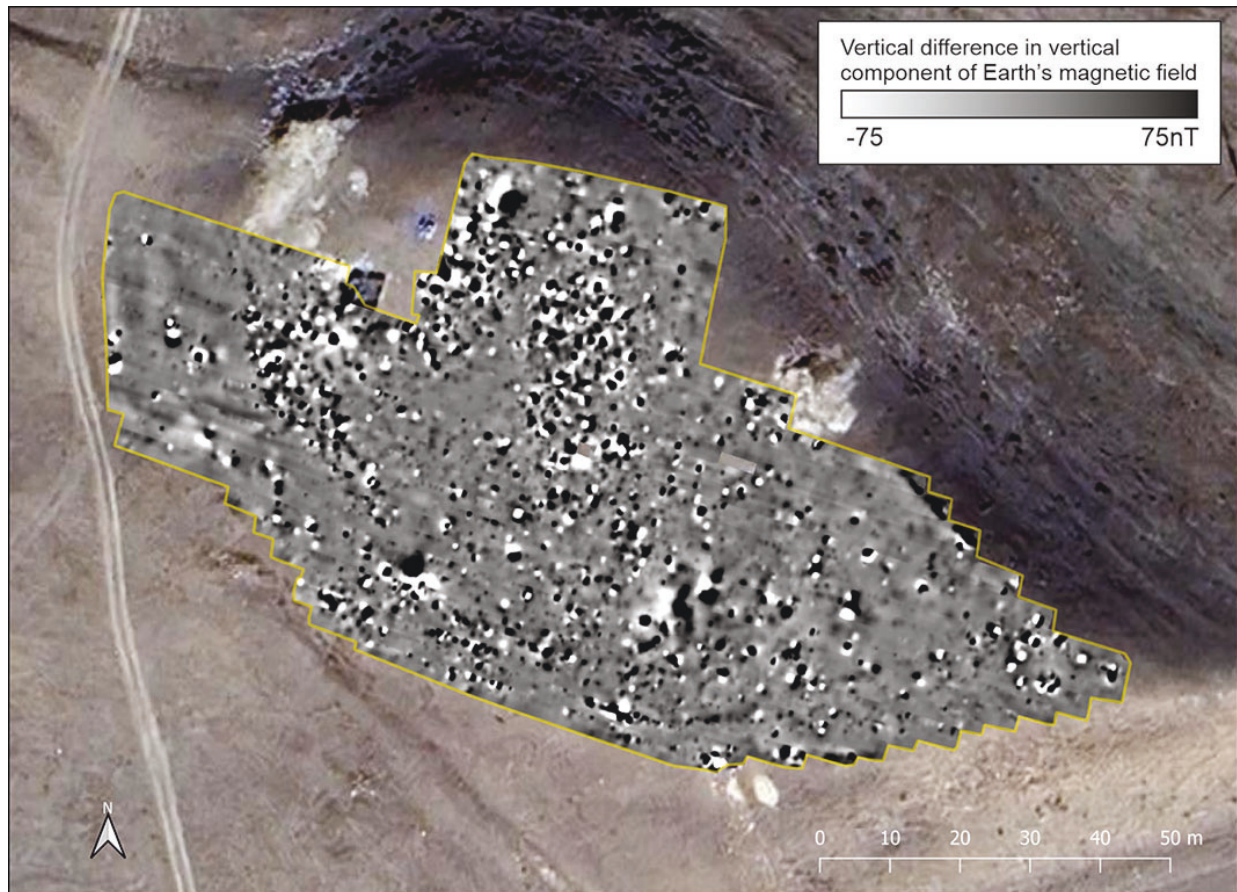


Figure 5. Artanish 9, magnetometer results (figure by W. de Neef & B. Ullrich).

The geophysical surveys confirmed the continuation, along the steep northern and southern slopes, of a substantial stone wall first seen in trench A (Figure 7). Combined, the surveys yielded a complete spatial model of the site, delineating domestic structures, fortification elements and unoccupied areas (Figure 8).

Results

Magnetometry

The magnetometry data reveal high magnetic intensities associated with locally available rocks, which contrast sharply with lower background signatures (Figure 5). These materials include gabbro and other mafic intrusive rocks from nearby outcrops (Galoyan *et al.* 2009). They appear in clustered anomalies, indicating their use in structural features across the site. One such cluster corresponds to a large burial mound on the summit, composed of rock and dated to the late Middle Bronze Age by artefacts from its excavation (Figure 8, feature 1). A second, smaller mound lies just to the south (feature 2), dated to the early Middle Bronze Age. Strong magnetic dipole anomalies in these areas obscure possible underlying contexts.

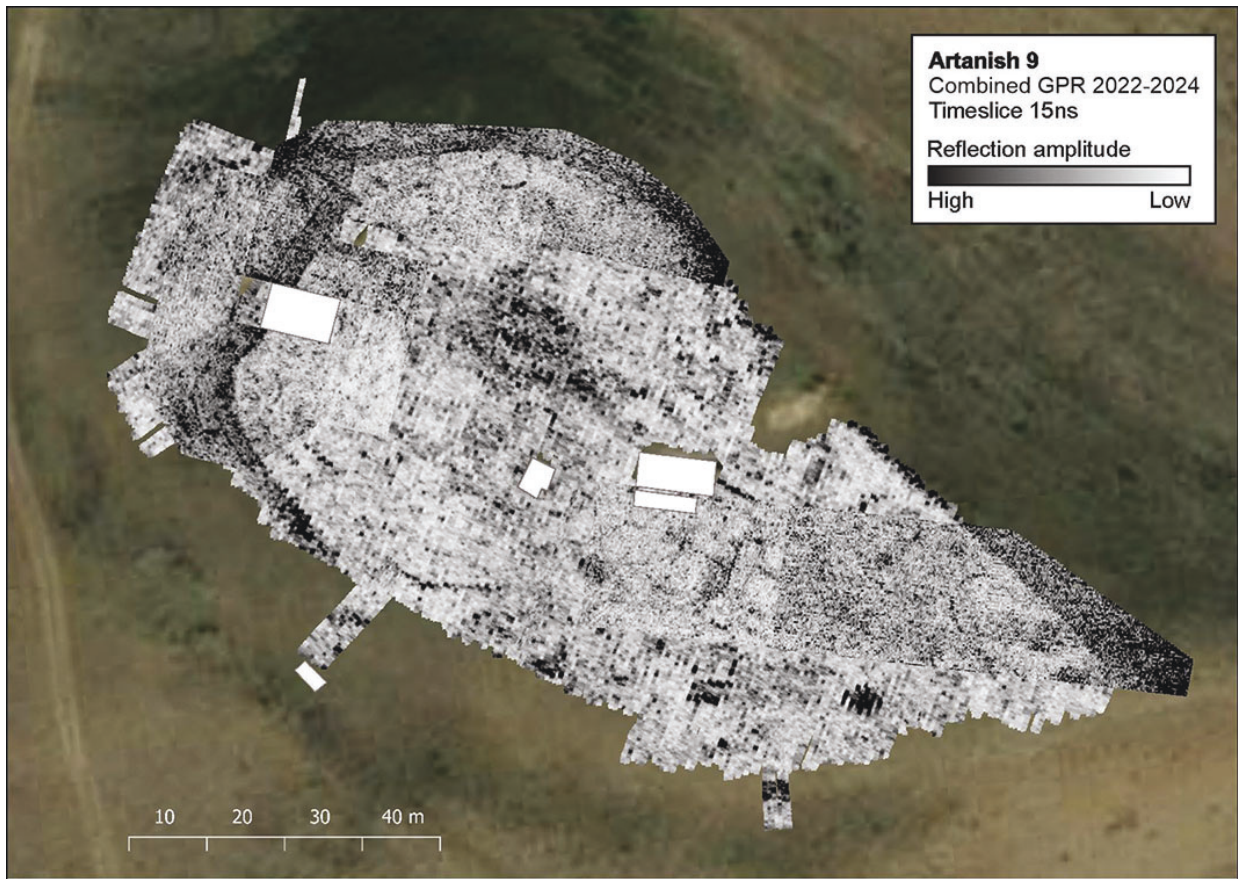


Figure 6. Artanish 9, composite GPR results (2022–2024). The approximate depth is 0.75m (assumed velocity 0.1m/ns) (figure by W. de Neef & B. Ullrich).

Elsewhere, high-intensity anomalies are more sparsely distributed, suggesting the integration of open areas into planned settlement layouts (e.g. area 3). Some strong dipoles may reflect burnt installations such as kilns or ovens (features 4 & 5), though this remains to be verified.

Horseshoe-shaped features with positive magnetic signatures (features 6–9) likely represent foundation trenches of domestic houses—stone-based structures such as those confirmed by excavation. Along the plateau’s edges, magnetometry indicates large architectural elements, particularly a straight anomaly on the north-east side formed by exposed gabbro blocks (feature 10) and linear features to the south-east (feature 11), possibly outlining the inner and outer faces of perimeter walls.

Ground penetrating radar

GPR data corroborate the magnetometry findings and offer greater structural clarity. A curvilinear wall encircles the plateau, following the slope break (feature 13; detail in Figure 9). We can distinguish ashlar outer and inner wall faces and infill rubble. Wall widths vary—2.5m in the north, up to 4m in the west—reaching approximately 8m at a sharp turn on the western slope, likely due to collapse.



Figure 7. Radar survey next to trench A at Artanish 9 in 2024 (view from the south). The massive stone perimeter wall is seen in the centre, remains of stone foundations of circular domestic buildings are visible to the right (photograph by W. de Neef).

In the north-west, a rectangular annex protruding from the perimeter (feature 14) may mark a gate complex, though interior reflections suggest collapse and rubble fill (Figure 9). A linear wall extending south-west of this annex (feature 15) appears to control the main access route to the hilltop. Another possible entrance lies on the southern slope, indicated by parallel wall anomalies in both magnetometry and GPR data (feature 17).

The plateau is densely occupied. Oval and circular structures—typically 5–6m in diameter—appear throughout, often in clusters, particularly in the north-west and west. A larger example (nearly 7m) in the eastern zone may represent a round building (feature 18). One such oval house was excavated in trench A near the western wall and dated to the later Early Bronze Age (feature 19; Amiryan *et al.* 2024).

Rectangular structures also appear, most notably a centrally located building with a 7 × 9m main room and adjacent smaller rooms to the north and south (feature 20). Nearby alignments suggest additional rectilinear architecture of similar orientation.

Two central, circular anomalies correspond to the burial mounds identified via magnetometry. Excavations between 2022 and 2024 confirmed these as Middle Bronze Age funerary monuments. GPR data indicate earlier architectural layers beneath the mounds, including rectangular structures (features 21 & 22), likely reused or commemorated in the later burial phase.

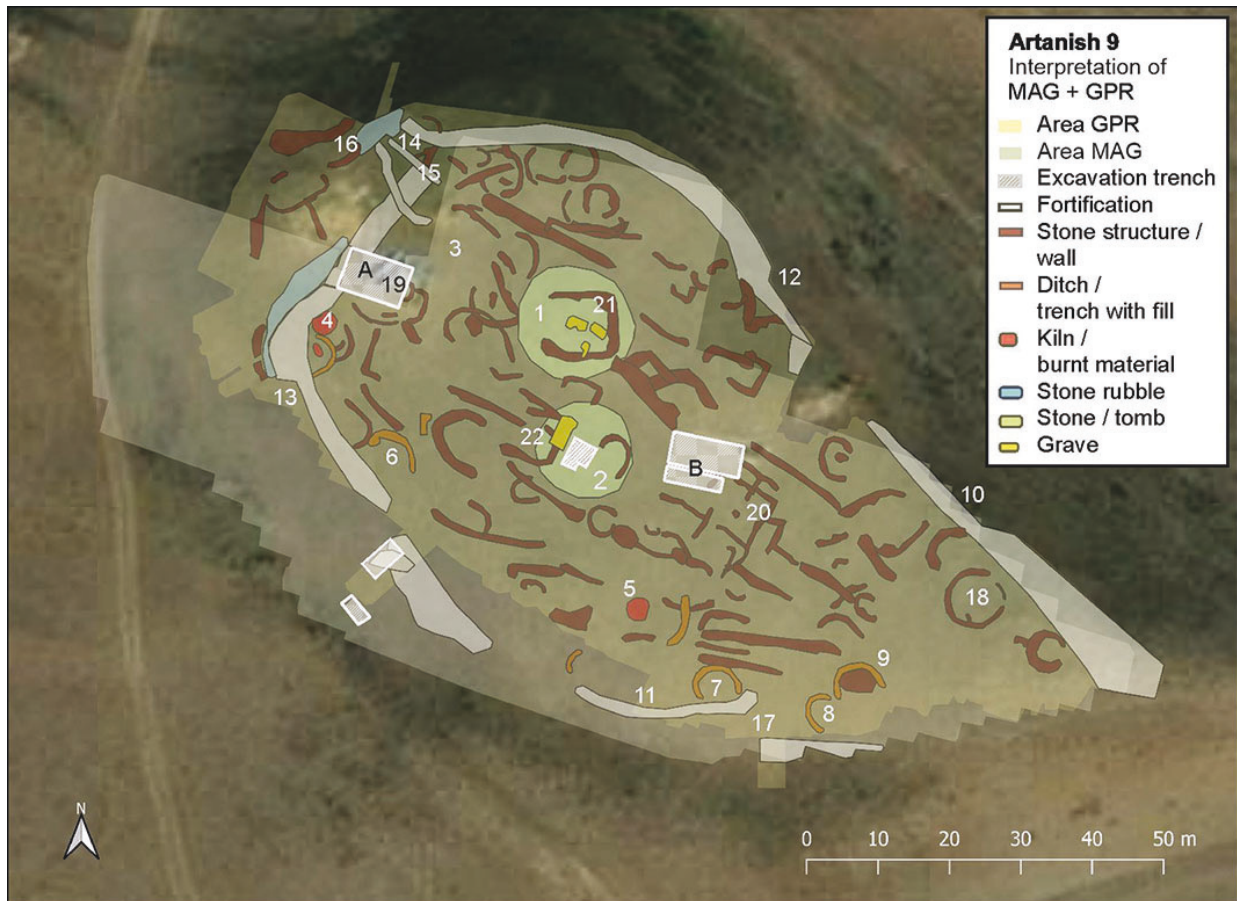


Figure 8. Combined interpretation of magnetometer and GPR surveys at Artanish 9. Numbers refer to features discussed in the text (figure by authors).

The combined use of magnetometry and GPR offers a rare opportunity to assess the effectiveness of multimethod geophysical prospection in an Early Bronze Age context. GPR remains underutilised in prehistoric research in the Caucasus, and existing studies often suffer from limited interpretive value due to low-resolution survey data (e.g. the GPR survey at Shengavit; Durgaryan *et al.* 2023). At Artanish 9, the complementary strengths of magnetometry and GPR enhance the identification and interpretation of subsurface features and provide a more nuanced understanding of spatial organisation and construction practices. Yet, some challenges remained. Steep terrain limited equipment mobility, and interpretation is complicated by the variable physical properties of local stone. Magnetometry was less effective in areas with thick surface cover or weak contrasts at depth. Nonetheless, the integrated approach enabled near-complete mapping of a small, single-period settlement.

Discussion

The integrated results of geophysical survey and targeted excavation provide the first comprehensive spatial reconstruction of a small Kura-Araxes settlement in the Armenian highlands. This dataset offers a rare opportunity to examine architectural variability and

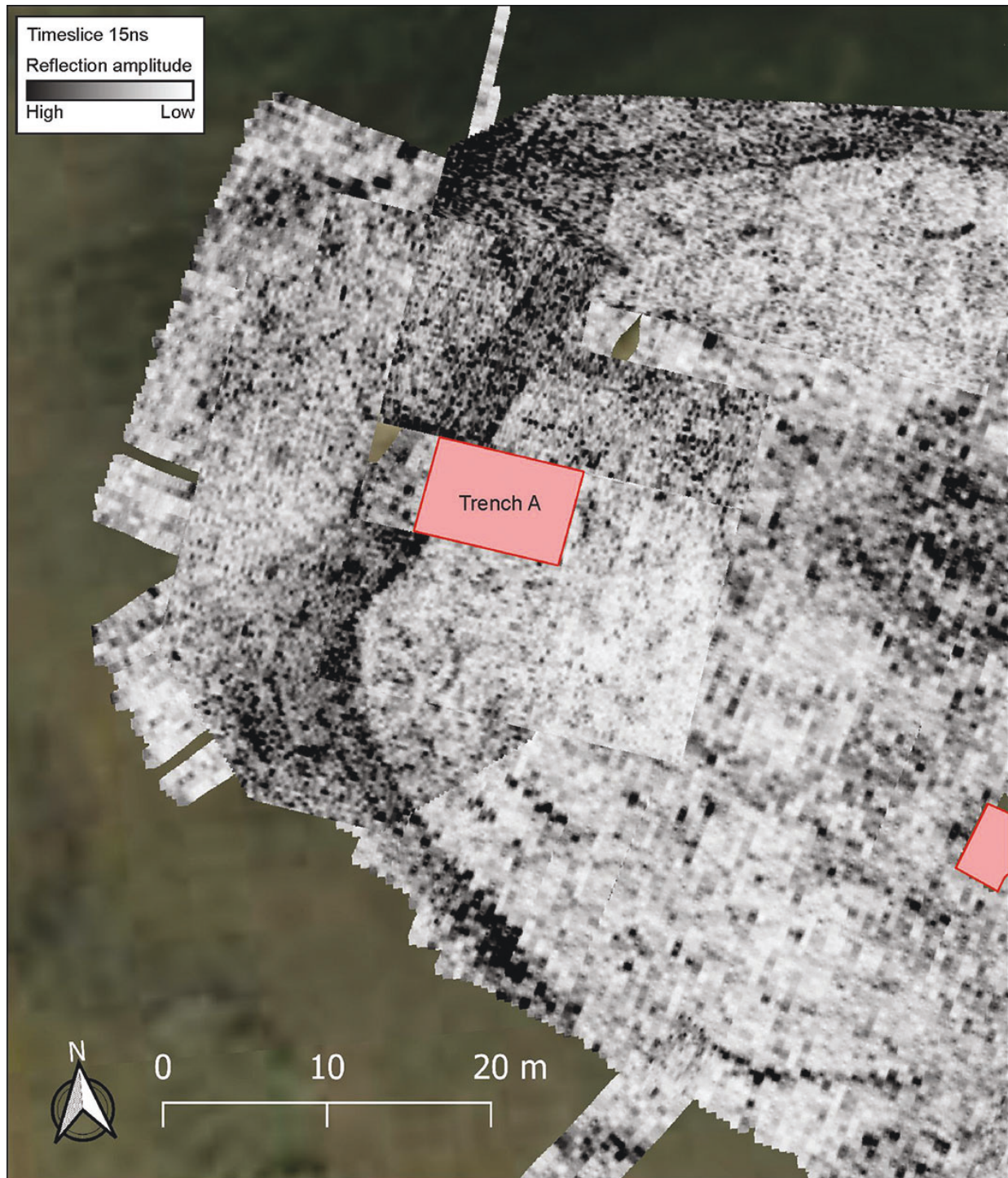


Figure 9. Detail of GPR results on the western section of the wall and possible gate complex at Artanish 9 (figure by W. de Neef & B. Ullrich).

the organisation of space within an Early Bronze Age context, revealing both consistent building patterns and intra-site variation among domestic structures. At the regional level, the Artanish 9 case study contributes to broader discussions of settlement differentiation between upland and lowland environments, and the increasing complexity of socio-economic systems during the later phases of the Kura-Araxes tradition. Methodologically,

the project serves as a test case for evaluating the effectiveness of non-invasive survey techniques in Early Bronze Age contexts, with excavated trenches providing essential ground-truthing for geophysical interpretations.

Settlement and community at Artanish 9

Spatial organisation at Artanish 9 reflects a closely integrated community with signs of both social cohesion and functional differentiation. Architectural remains include at least 35 domestic structures ranging in area from 25–70m². Most are oval or semi-rectangular buildings likely serving individual households, while larger rectangular buildings—such as the 7 × 9m structure near the centre—may have housed extended families or performed communal functions. Both the oval and the rectangular houses at Artanish 9 are smaller than contemporaneous structures elsewhere in Armenia. This local character is underpinned by the pottery assemblage recorded in the excavations, which is typical for the Sevan region (Amiryan *et al.* 2024).

The co-occurrence of circular and rectangular architecture during the same occupation phase (*c.* 2800–2600 BC) is notable. Similar architectural duality is observed at Shengavit (Armenia) and Kvatskhelebi (Georgia) and has been interpreted as evidence of increasing social complexity in the later Kura-Araxes period (Simonyan & Rothman 2022). At Shengavit, concentrated bone deposits found in large rectangular buildings that occupy the upper layers of the site suggest a use for communal or symbolic gatherings (Simonyan & Rothman 2015, 2022), departing from smaller, circular buildings in the lower layers.

One deep, bell-shaped storage pit excavated in trench B at Artanish 9, near the multiroom rectangular building, exceeds typical household needs, suggesting supra-household food storage or surplus management. Comparable facilities at Shengavit have been interpreted as centralised storage (Simonyan & Rothman 2022). Additional rectangular structures beneath the Middle Bronze Age burial mounds may have served communal purposes and retained social significance into the later period.

The most explicit marker of collective organisation is the monumental perimeter wall, over 300m long and 2–4m wide. Built with locally quarried stone, it required planning, material procurement and communal labour. While such construction need not imply social hierarchy, it does indicate a capacity for co-ordinated action. As suggested for the fortifications at Shengavit (Rothman 2016), such communal efforts by Kura-Araxes communities may have been organised through shared kinship responsibilities rather than elite control. New radiocarbon dates demonstrate that the wall at Artanish 9 was erected in the same period as the houses and thus appears to be an integrated part of the site's foundational layout.

The Lake Sevan settlement system and regional role

Artanish 9 represents the only securely dated Early Bronze Age fortified site in the Lake Sevan area. Although other nearby sites, such as Norabak 1 and Tsovak 1, have tentative Early Bronze Age attributions, these remain unverified by excavation. Sotk 2—despite its

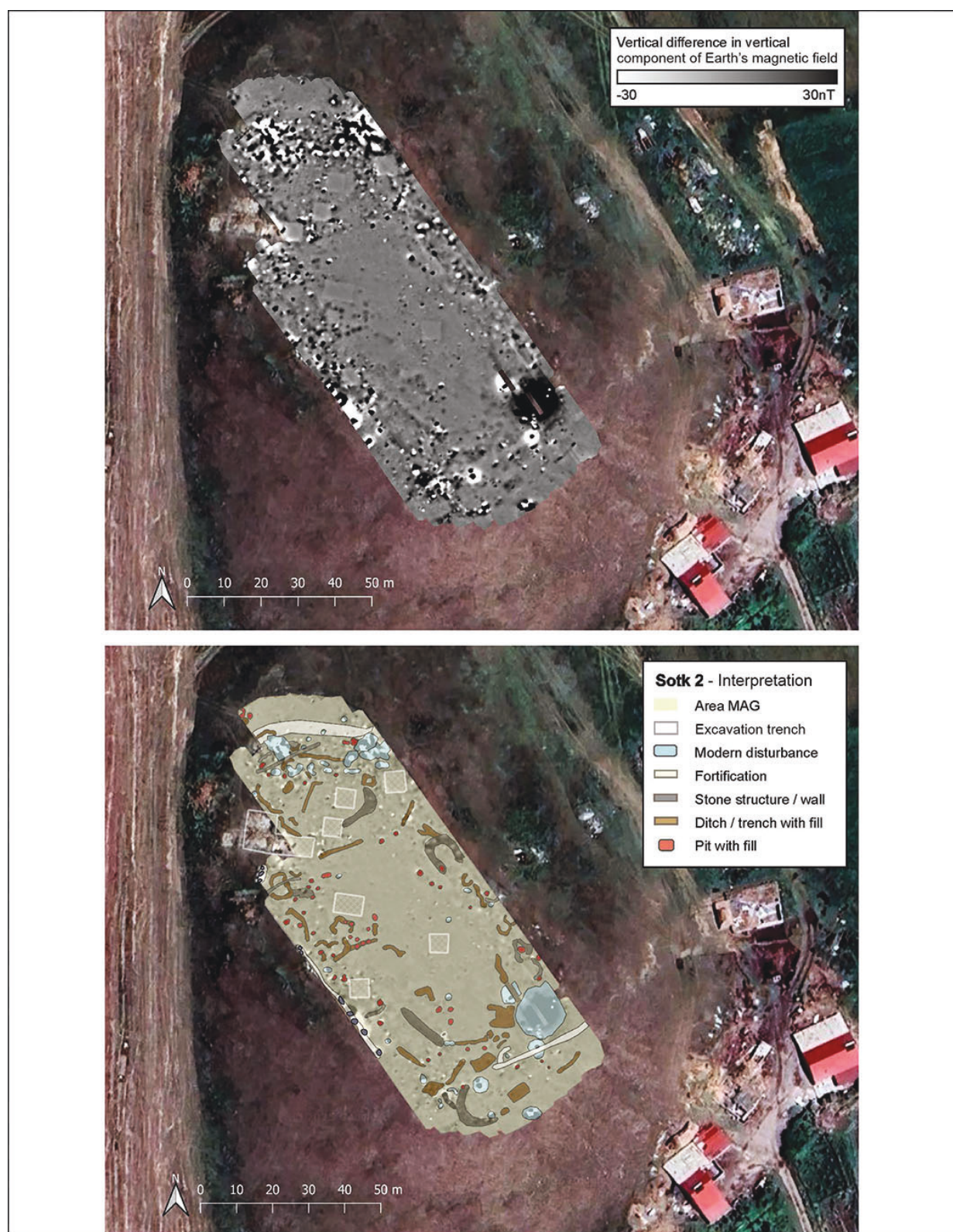


Figure 10. Sotk 2, magnetometer results (top) and interpretation (bottom) (background: Google Earth; imagery by CNES/Airbus; obtained 9 October–2 November 2023; figure by authors).

regional importance and resource access—appears to lack fortifications before the Middle Bronze Age, although this also needs verification (Kunze *et al.* 2013). The presence or absence of perimeter walls highlights regional variation and suggests that local factors influenced site function and architecture during the late Kura-Araxes period.

A magnetometer survey at Sotk identified architectural remains primarily along the edges of the plateau (Figure 10), but follow-up GPR investigations were not possible due to ongoing border tensions. Although these features may belong to later occupation phases, a future GPR survey could clarify whether or not the earliest settlement levels at Sotk 2 shared spatial characteristics with Artanish 9.

Proximity to rich gold, copper and obsidian sources likely shaped the role of Sotk 2 as a crafts and resource extraction centre. Excavations revealed workshop debris, ash layers and a diverse obsidian assemblage (Kunze *et al.* 2013). In contrast, Artanish 9 lacks direct evidence of metallurgy or obsidian working. Its monumental enclosure suggests a different function—possibly related to regional surveillance, storage or community cohesion rather than resource processing.

Fortified Early Bronze Age sites remain unevenly documented. Known examples, such as Shengavit, Dvin and Mokhrablur (see Figure 1), are typically large (4–12ha), situated in lowland plains, and are often interpreted as regional centres. Ravaz in north-west Iran (15ha), although unexcavated, features a walled acropolis and lower town (Kleiss & Kroll 1979; Kohl 2009). Despite fortification, the lack of widespread conflict indicators in Kura-Araxes contexts—weaponry, destruction layers or osteological trauma in burials—seems to suggest that these enclosures served non-military purposes (Simonyan & Rothman 2015).

Artanish 9, at just 0.6ha, is unusually small for a fortified site. However, recent discoveries, such as Berdi Glukh (Petrosyan *et al.* 2020, 2022; Biscione *et al.* 2024), suggest that small-scale fortifications were not exceptional and may reflect local community strategies rather than centralised power. The scale of construction at Artanish 9, by a community of perhaps 200 people (estimating approximately five inhabitants per structure), underscores the importance of local agency within the wider Kura-Araxes system.

What motivated such fortification at Artanish 9 remains a key question. Unlike Sotk 2, which was strategically located near placer gold, obsidian and copper sources, Artanish 9 shows no direct evidence for metal extraction or processing. This suggests that its fortifications were not built to protect mineral wealth or workshop products. Rather, Artanish 9 may have functioned as an autonomous agro-pastoral community embedded in a broader socioeconomic network that distributed subsistence risk across the highland landscape. Its setting, near a key northern access route into the Lake Sevan basin, implies strategic value—not necessarily for military control, but for monitoring movement, exchanging goods and maintaining social ties. Metal and obsidian analyses from Chalcolithic (*c.* 5000–4000 BC) and Early Bronze Age (3500–2500 BC) Mentesh Tepe in Azerbaijan (Astruc *et al.* 2020; location in Figure 1) suggest that copper, gold and obsidian from the Sevan area may have passed through the Artanish corridor, possibly with other resources moving southwards in return.

Highland communities are especially vulnerable to environmental and subsistence risks. The modest scale and architectural variability of Artanish 9 suggest an emphasis

on kin-based co-operation, reinforced by shared storage facilities, larger communal buildings and unoccupied areas for distinct activities. These features suggest a flexible, networked social system as the base of risk mitigation strategies rather than sociopolitical hierarchy.

Animal bones recovered from the excavations—mostly sheep/goat but also cattle and horse—suggest that livestock mobility may have been part of the maintenance of these social networks. However, while often portrayed as semi-nomadic, Kura-Araxes communities show limited evidence of high mobility; zooarchaeological and isotopic studies increasingly indicate localised herding (Hovsepyan 2015; Decaix *et al.* 2019; Stöllner 2021; Maurer & Greenberg 2022). Given the availability of arable land and pasture near Artanish 9, seasonal mobility may not have been necessary. Instead, social resilience likely relied on alliances for marriage, exchange and mutual aid among nearby settlements such as Sotk 2.

In this context, the perimeter wall of Artanish 9 may have served symbolic, organisational or integrative, rather than defensive, functions—delineating community space or materialising collective identity within a highland network of interdependent villages. Indeed, the abandonment of the village around 2600 BC was not related to violent destruction or military action, but rather part of a widespread cultural change marking the transition to the Middle Bronze Age.

While our research fills an important gap in the archaeological map of Armenia, many questions remain. Understanding the spatial and temporal relationships among sites in the Lake Sevan region will require expanded off-site surveys, environmental analysis and refined radiocarbon dating. Inaccessible areas such as the Areguni mountains are still archaeologically unknown due to ongoing border issues, and we do not know whether they were part of the settled or productive landscape. We hope that a peaceful future will enable further investigation of this underexplored landscape.

Conclusions

Geophysical surveys and excavations at Artanish 9 have revealed previously undocumented aspects of Early Bronze Age highland settlement in the Lesser Caucasus. The discovery of a monumental perimeter wall enclosing a small, densely occupied site challenges the prevailing model of small, unfortified, egalitarian Kura-Araxes villages. The architectural layout—including circular and rectangular buildings, communal storage facilities and open areas—points to a socially integrated, kin-based community with limited but meaningful internal differentiation.

Placed within a broader regional context, Artanish 9 exemplifies the diversity of Early Bronze Age settlement strategies in the Lake Sevan basin. Sites such as Artanish 9 and Sotk 2 appear to have specialised in different functions—surveillance, storage, resource extraction—within a non-centralised but interdependent network. The resilience of these highland communities likely stemmed from their ability to distribute risk and resources across socially embedded alliances.

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Online supplementary material (OSM)

To view supplementary material for this article, please visit <https://doi.org/10.15184/aqy.2026.10350> and select the supplementary materials tab.

Author contributions: CRediT categories

Wieke de Neef: Conceptualization-Lead, Data curation-Lead, Formal analysis-Lead, Investigation-Equal, Methodology-Equal, Project administration-Equal, Resources-Equal, Software-Equal, Validation-Equal, Visualization-Lead, Writing - original draft-Lead, Writing - review & editing-Lead. **René Kunze:** Conceptualization-Equal, Data curation-Equal, Formal analysis-Equal, Funding acquisition-Lead, Investigation-Equal, Project administration-Lead, Resources-Lead, Supervision-Lead, Validation-Equal, Visualization-Equal, Writing - review & editing-Equal. **Burkart Ullrich:** Conceptualization-Equal, Data curation-Equal, Formal analysis-Equal, Investigation-Equal, Methodology-Equal, Resources-Equal, Software-Equal, Validation-Equal, Visualization-Equal, Writing - review & editing-Equal. **Arsen Bobokhyan:** Conceptualization-Equal, Data curation-Equal, Formal analysis-Equal, Funding acquisition-Lead, Investigation-Equal, Project administration-Equal, Resources-Equal, Supervision-Equal, Writing - review & editing-Equal.

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