Report on the Autumn 2025 Field Season of the "Georgian-Italian Gardabani Archaeological Project"

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INTRODUCTION

The Autumn 2025 field season of the Georgian-Italian Gardabani Archaeological Project, jointly carried out by Ca' Foscari University of Venice (Italy) and Ilia State University of Tbilisi, was mainly dedicated to continuing the regional survey of the southern part of the Gardabani region, the first stage of which is now nearly complete. The team also continued other activities initiated during the summer 2025 season: GPR prospections and drone footage at Gardabani Kurgan Field (site GS001), deep geological corings in the area of Jandara lake, and documentation of finds from the Gardabani area stored at the local Museum. The physical anthropologists affiliated to the project continued the study of the human osteological material from the Medieval monasteries in Borjomi region and collected samples for different types of analyses.

The Italian team arrived in Georgia on November 5th and reached Gardabani, where the expedition house was located, on the same day. It flew back to Italy on November 28th. The team was headed by prof. Elena Rova of Ca' Foscari University (co-director of the project) and included: dr. Francesco Bianchi; Riccardo Fava and Michela Ferracin, MA students; Joel Lovat and Rebecca Noemi Capezzera, BA students (Ca' Foscari University), archaeologists, and Lorena Cannizzaro, archaeologist and topographer. Stefania Fiori (PhD candidate at Kiel University) followed the work on the team in remote.

The team was joined from November 6th to November 16th by prof. Francesca Bertoldi (Ca' Foscari University) and prof. Francesco Fabbri (Museo Fiorentino di Preistoria), physical anthropologists, with the on-line participation of dr. Giorgia Vincenti (Museo Fiorentino di Preistoria), also physical anthropologist.

The Georgian team was composed of: Levan Navrozashvili, geologist (assistant professor at Ilia State University) officially representing the Georgian institution on the field, Dimitri Akubardia, Nikoloz Metreveli and Davit Stiklauri (researchers from the Department of Earth Sciences at Ilia University), GPR specialists; Nino Ustashvili and Dimitri Natchebia (MA students), Paata Chlaidze and Giorgi Arjevanishvili (BA students at Ilia University). Mr. David Kandelaki and Mr. Bakuri Chergezishvili drove the Toyota Landcruiser kindly provided by Ilia State University.

The following paragraphs contain a detailed description of the season's activities.

REGIONAL SURVEY

Survey of the Southern Part of the Gardabani Municipality

Survey activities were carried out in the course of the whole campaign and by all team members, under the responsibility of Elena Rova, Francesco Bianchi and Lorena Cannizzaro and with the remote supervision of Stefania Fiori. The aim of the season was "to fill the gaps" left by the previous survey campaigns, by revisiting areas identified and cursorily visited in 2023-2024, taking advance of the better visibility conditions granted by the late autumn weather and especially concentrating on cultivated sectors that could not be accessed either during summer or early autumn (periods of the previous seasons).

We focused in particular on the western/north-western portions of the municipality, i.e. on geomorphological/environmental zones A1 (the alluvial plain of the Kura) and A2 (the basins of its eastern tributaries, including old eroded alluvial fans) (**Fig. 1, Fig. 2**).

Fig. 1. Map of the survey region with indication of the different geomorphological/environmental zones

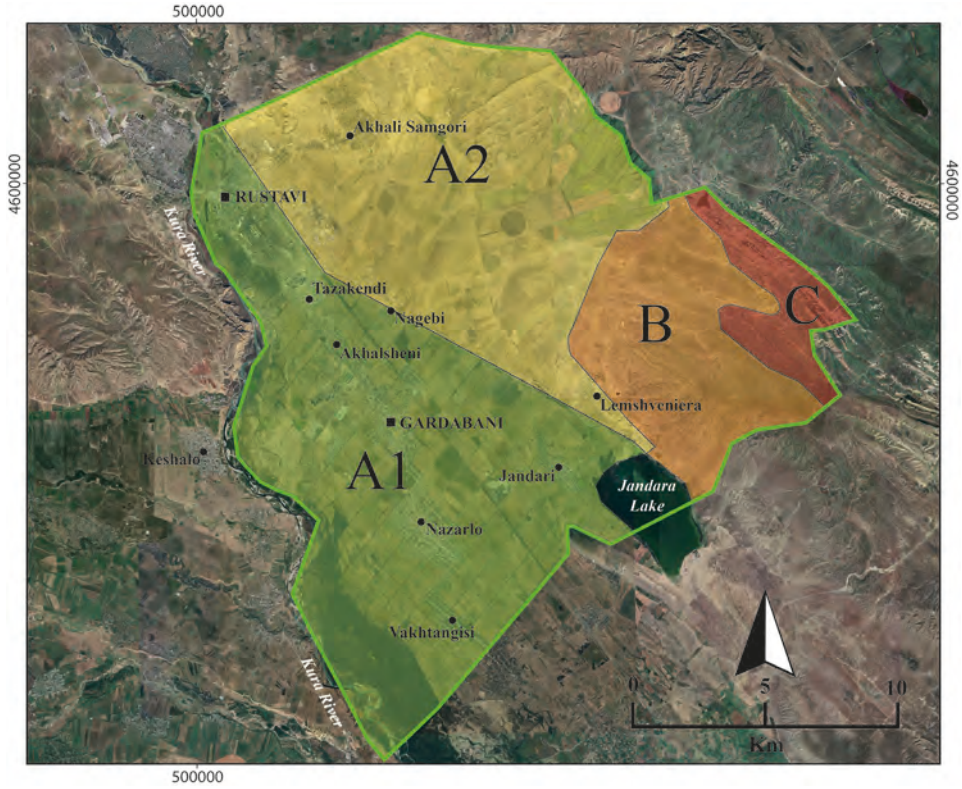
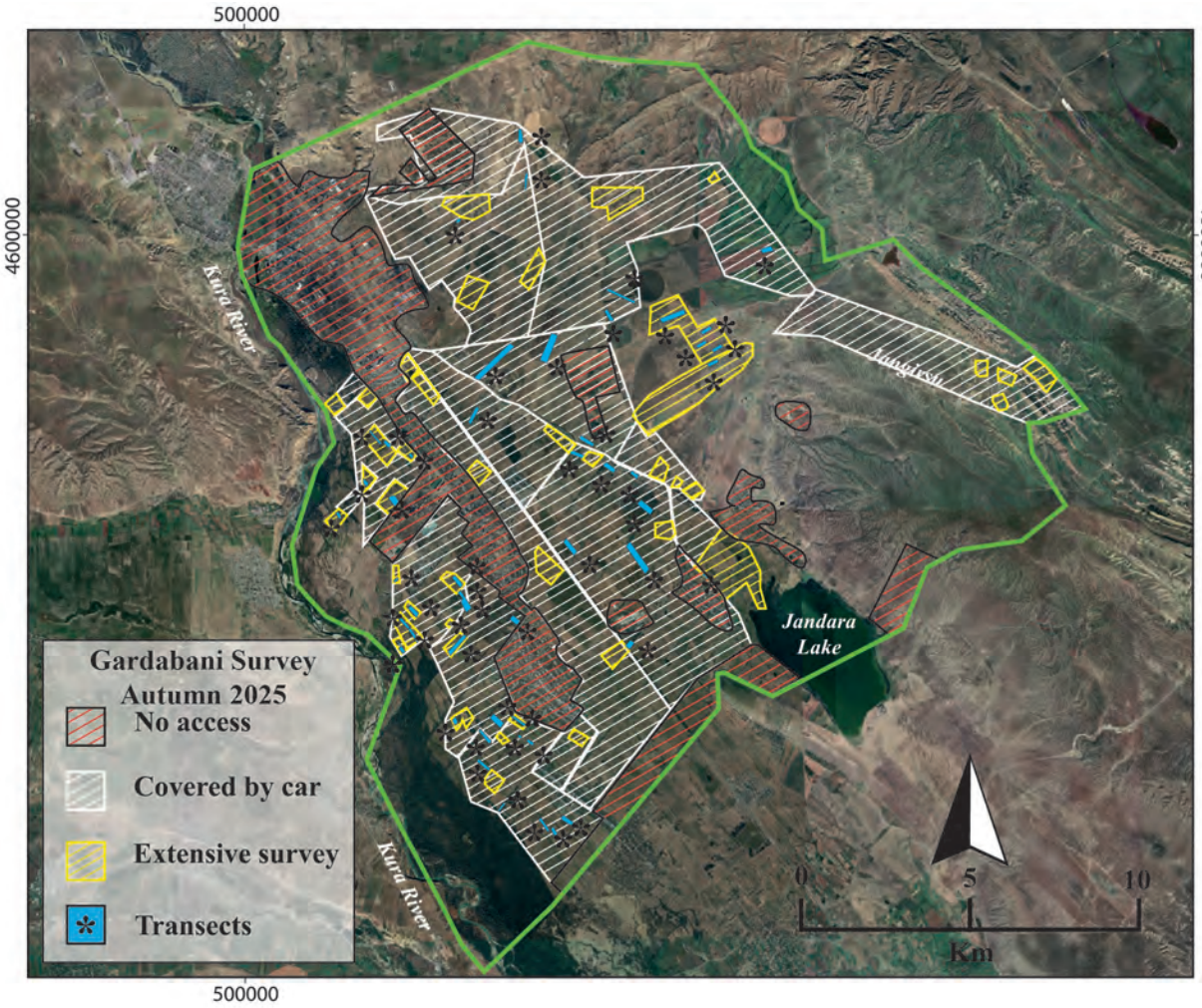


Fig. 2. Map of the survey region with indication of the areas surveyed in 2025



These represent the most intensively cultivated parts of the survey area, and could never be properly surveyed during the previous years. We also looked for traces of ancient irrigation canals, in particular of those supposedly dating to the Sassanid period, which are mentioned in ancient sources and had already been partially identified in modern literature (see, e.g., K. Hopper, D. Lawrence, K. Pitskhelauri, G. Philip, Appendix III. Investigations of Ancient Canal Systems in Central And Eastern Georgia, in E.W. Sauer et al., *Dariali: The 'Caspian Gates' in the Caucasus from Antiquity to the Age of the Huns and the Middle Ages: The Joint Georgian-British Dariali Gorge Excavations and Surveys of 2013–2016,* Oxford 2020). Finally, we dedicated a few days to zone C (the higher mountains bordering the Udabno Plateau, at an altitude between 550 and 670 m a.s.l.).

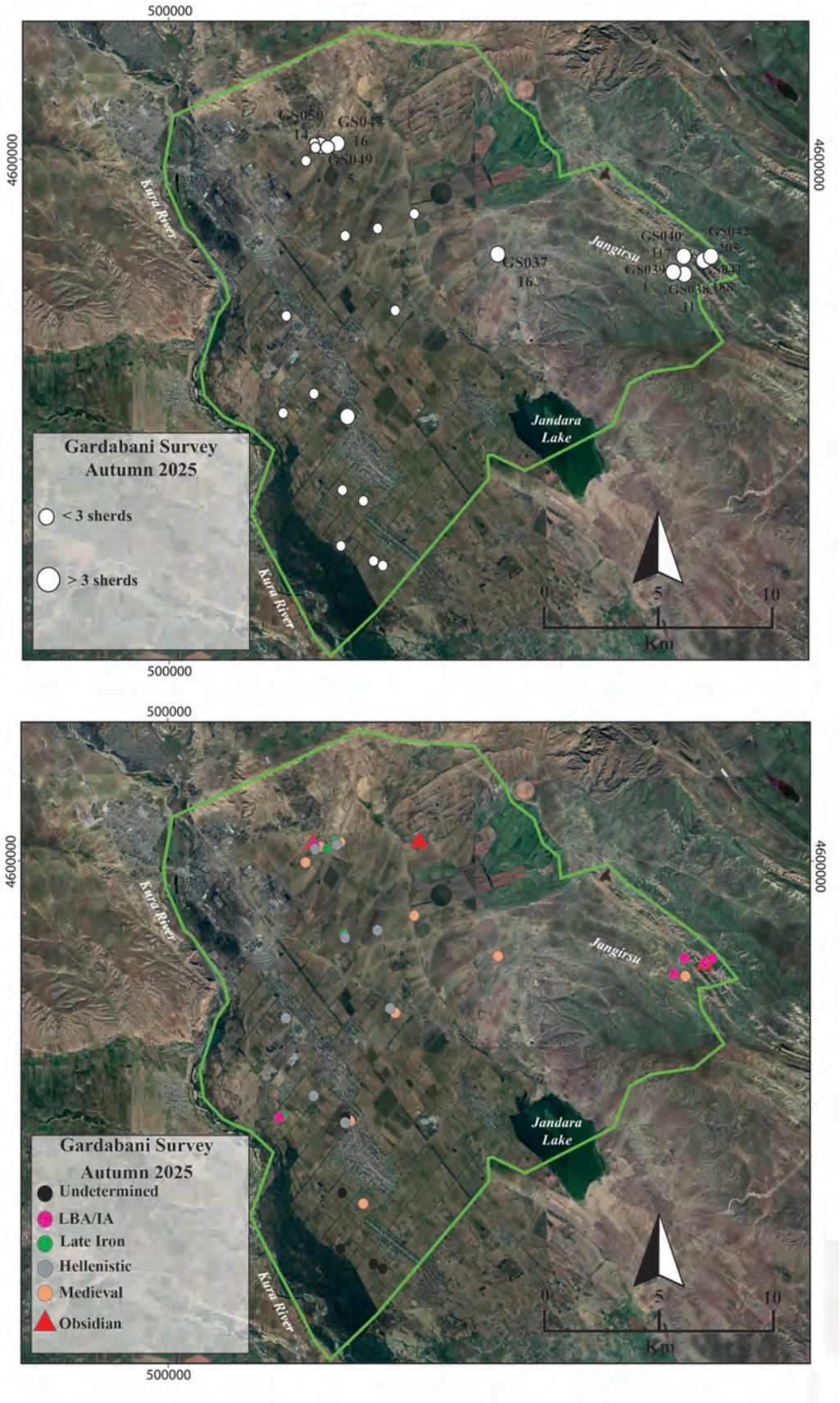
The adopted methodology was similar to that of the previous seasons: depending on the different conditions of visibility, we used three different types of sampling:

1) extensive coverage, by car, of wide areas with stops at identified places of interest (e.g. heights, hills or visible clusters of stones), in cases where visibility was close to zero (cultivated fields, uncultivated areas covered with very thick vegetation);

2) controlled extensive pedestrian survey with loosely spaced walking team members in areas where visibility was medium to low (e.g. reaped fields still occupied by stubble, uncultivated fields covered by dry sparse vegetation);

3) regular intensive transects with team members walking spaced every 10 meters with stops every 50 meters, on high visibility areas (recently ploughed fields, uncultivated areas with very sparse low

Fig. 3. Map of the Autumn 2025 survey region with indication of the finding spots and quantity of recovered sherds and obsidian fragments (above) and tentative date of the former (below)



dry vegetation). On a few small areas with optimal visibility, we also tried super-intensive collections with team members spaced at a distance of 5 meters from each other.

The amount of collected material did not change much depending on the used survey method: with few exceptions (sites GS040, GS041 and GS042, LB/EIA settlements in the mountainous C zone, where we collected several kilograms of pottery), it was indeed extremely low (no more than 3-4 sherds even for rather large transects) (**Fig. 3**). This suggests an extremely sparse and ephemeral occupation of the territory, in particular as concerns zones A1 and A2. Recovered pottery mainly belonged to the LBA/EIA and to the Hellenistic/Late Antiquity period, with only a minor component of Late Iron and Medieval pottery.

Collected sherds were almost invariably very small, suggesting a long history of damaging and dispersion by intensive and repeated ploughing. Contrary to the previous seasons, obsidian finds were extremely rare. This confirms that the lowlands, intensively investigated this year, were mainly occupied in the Hellenistic and later period.

The season was very successful, in that visibility conditions were indeed much better than in the past, though not always optimal. We could in fact locate several newly ploughed fields, though not as many as we had hoped, and numerous reaped fields partially free from stubble, while spontaneous vegetation in uncultivated areas was often thin enough to allow to see through it. We thus managed to cover a total area of 12.000 hectares (cf. **Fig. 2**), 167 of which by intensive transects – 57 in total, spaced as homogeneously as possible, considering visibility conditions, on the visited territory –, and nearly 2.400 by extensive pedestrian survey.

Fig. 4. Map of the survey region with indication of the total surveyed area (2023-2025 seasons)

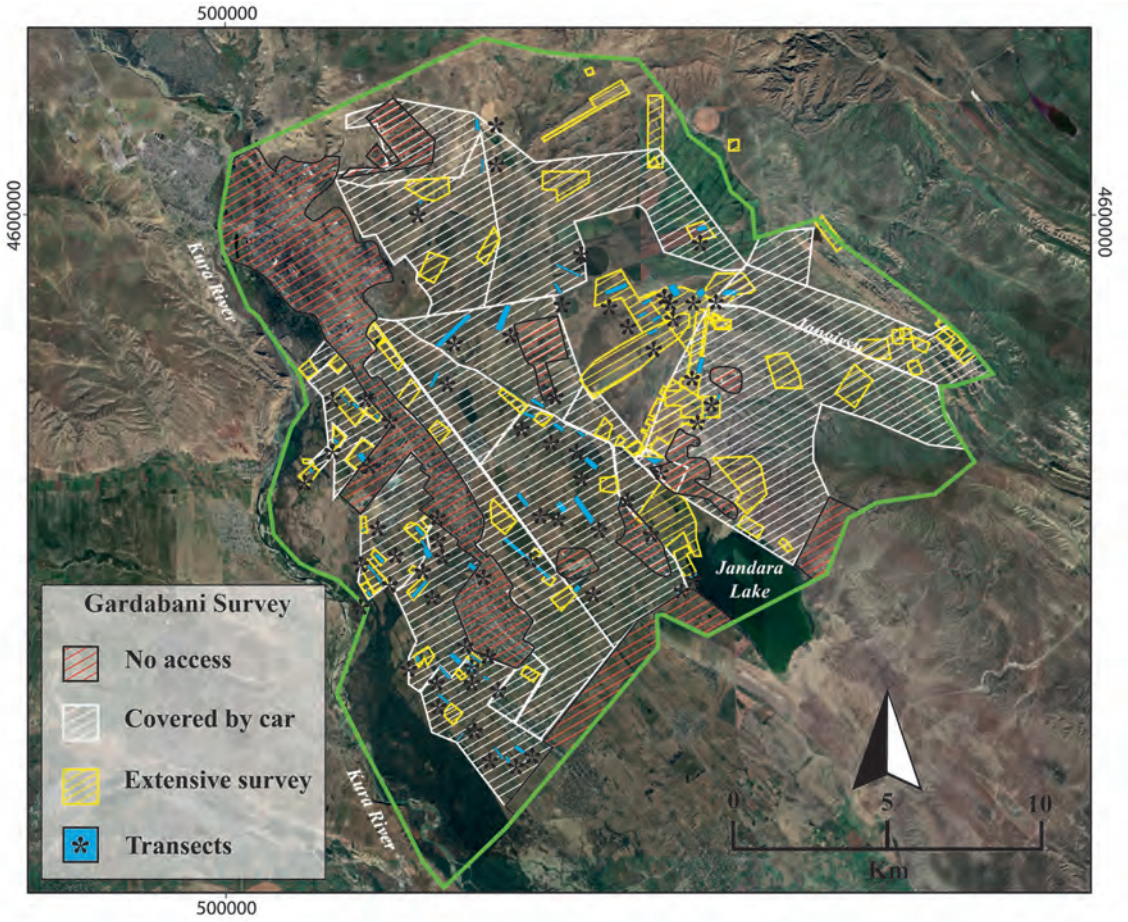
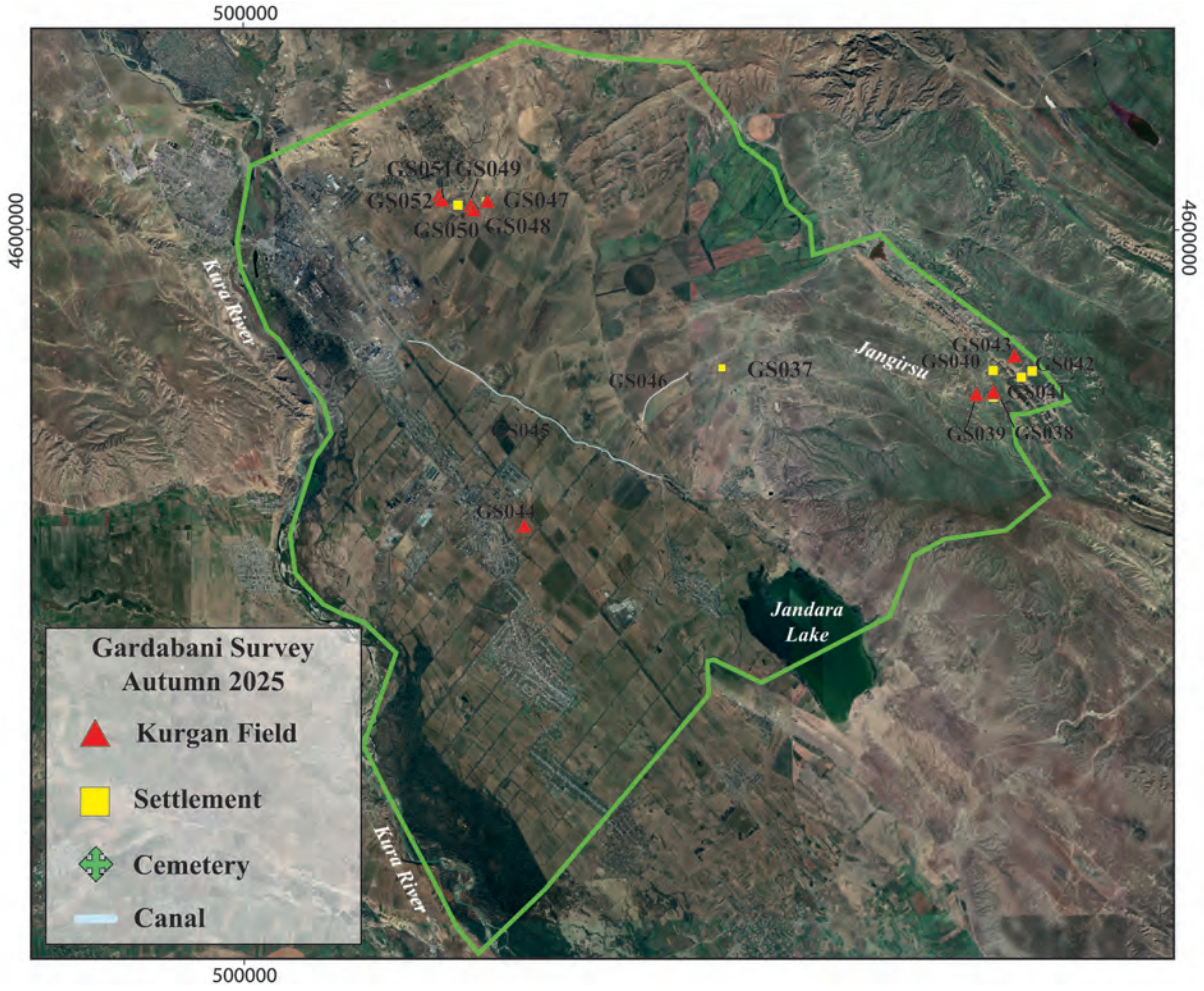


Fig. 5. Map of the Gardabani survey region with indication of the sites discovered in the Autumn 2025 season



As can be seen from the composite map of the 2023-2025 seasons (**Fig. 4**), the coverage of the surveyed area is now nearly complete, and intensive enough, to guarantee that the obtained results have a sound statistical value and can be considered representative of the anthropic use of the territory throughout the late prehistoric to modern periods.

In the course of the 2025 season, 16 new sites, nos GS037-GS052, were identified and georeferenced (**Fig. 5**). Some of them were already known from previous literature (Varazashvili 2010; Makharadze et al. 2018), but not all of these had been precisely georeferenced. Seven sites were kurgans/kurgan fields, five were settlements, two included a settlement and a kurgan field, and two were possible historical canals.

The complex represented by sites GS041 (UTM 38N 524861 E 4594784 N, alt. 698 m a.s.l.) and GS042 (UTM 38N 524907 E 4594913 N, alt. 683 m a.s.l.) (**Fig. 6**) can be considered a significant example of LBA/EIA occupation in the mountain zone. The former site lies on top of a steep NW/SE-oriented ridge overlooking a chain of "coloured mountains" on the western side, and a small inter-mountainous plateau, where site GS042 lies, on the eastern one. Stone terraces and traces of stone buildings are visible on the top of GS041, which extends over an area of 0.31 hectares. Abundant ceramic and lithic material, recovered from the eroded slope, suggests the presence on the top of buried undisturbed occupational layers. Site GS042 is located on the small underlying plateau on the edge on two deep ravines and extends over an area of ca 0.72 hectares. It yielded similar material, although in more fragmentary conditions due to repeated recent ploughing.

Fig. 6. Views of the complex of LBA/EIA sites G0S41/GS042: view of the complex from E with site GS041 on the back and site GS042 beyond the ravine (above); view of GS041 from E, from GS042 (below left): terracing wall on top of the slope of site GS041, from NW (below right)

Site GS047 represents a good example of a cluster of hitherto unknown kurgan sites (GS047, GS048, GS049, GS051, GS052) located on the hills to the east and south of the village of Akhali Samgori, at the northern limit of the survey area, that the GIGAP team discovered during the last two days of the field season. The kurgan fields are located on the top of low hills running in a roughly NS direction, in dominating position overlooking the Kura Valley to the south. The whole area is heavily disturbed by modern activities, but the location of numerus individual kurgans can still be detected on the ground.

Kurgan Field GS047 (UTM 38N 507445 E 4600456 N, alt. 353 m. a.s.l.) has an extension of approximately 4 hectares (**Fig. 7**). There we identified one preserved kurgan (no. 1) and several other circular scatters of stones, most of which probably represent flattened or destroyed kurgans. Kurgan no. 1 was better preserved than the others because it lay near the SW limit of the site, close to a small canalisation. The kurgan has a diameter of ca. 14 m and it raises about 1.5 m above the ground.

Fig. 7. View of Kurgan no. 1 at site GS047 from SE

In the area of the site we also collected few pottery sherds, chronologically attributed to the Hellenistic and Medieval periods, that are clearly not synchronous with the kurgans.

As anticipated, during the Autumn 2025 field season the GIGAP team also focused on investigating the possible remains of a Sassanid-period canal system mentioned in historical sources and believed to have crossed the Garbadani territory for at least 16 km, approximately from Rustavi to Gardabani. These sources describe the construction, in the 4th century A.D., of a main canal supported by several secondary branches, which experienced alternating phases of use, modification, and abandonment over the centuries, continuing in use at least into the Soviet period. To approach this question, we combined remote sensing analysis with on-ground survey. By overlaying satellite data with observations made directly in the field, we identified several stretches that could potentially be linked to this ancient canalisation system.

One of the focal points of our investigation was the Mariini Canal (**Fig. 8**, above), the general alignment of which appears compatible with the course attributed to the Sassanid canal (NW limit: UTM 38N 500233 E 4599387 N, alt. 298 a.s.l.; SE limit: UTM 38N 507457 E 4594417 N, alt. 313 a.s.l.)

Close to its present southern limit, near a partially collapsed Soviet-era building, we examined two Soviet dams that today regulate water distribution into modern irrigation channels. These features clearly belong to recent phases, yet they lie along a route that could preserve an older underlying structure. Beyond the southern limit of the modern canal we observed a presently interrupted canal segment that might still belong to the ancient layout. We attempted to follow this line for several hundred meters. However, the situation became increasingly unclear: the watercourse quickly became highly sinuous and meandering, a form clearly inconsistent with an artificial construction. Satellite imagery confirms the natural origin of this section of the watercourse.

Fig. 8. View of the main Mariini Canal (site GS045) close to its southernmost point, from W, with visible Soviet modifications (above); view of the possible abandoned branch of the same canal from NE (below)

From our field observations, the canal – at least in its modern form – remains visible for about 10 km. Its original length, however, may have approached 16 km, running from the Kura River near Rustavi up to the sector described in the previous paragraphs.

On the opposite (eastern) side of the present road flanking the Mariini Canal, we identified another abandoned canal (**Fig. 8**, below), unused today and partially infilled, also extending for approximately 10 kilometers from the southern periphery of Rustavi to the east of the present town of Gardabani. This may represent an earlier version, or a secondary branch of the Mariini system. We followed it by car and on foot until it entirely disappeared beneath the ground. Google Earth imagery suggests that this canal continues southward and eventually connects to the Mariini Canal (Site GS045), which then merges into a natural watercourse flowing into Lake Jandara.

We also attempted to survey the fields on both sides of the two canals, with only limited success. We inspected some fields where visibility was particularly poor due to dense vegetation, despite the grass not being very high, and several presently unploughed areas (most of the region is nowadays used for fodder production, which significantly reduces the probability of spotting archaeological material on the surface). Over the whole area, we detected only a handful of pottery sherds, all of them tentatively dated from the Hellenistic to the Medieval period.

Northeast of the Mariini canal, we tentatively spotted what may be identified with one of the secondary canals feeding the former which are mentioned by the written sources, site GS046 (NE limit: UTM 38N 513897 E 4416910 N, alt. 365 m a.s.l.; SW limit: UTM 38N 512635 E 45193478 N, alt. 3336 m a.s.l). Starting from the southernmost visible point of the supposed canal, we moved north-eastwards, first on foot and then by car. The first stretch was relatively regular, not perfectly straight but with gentle curves (**Fig. 9**). The slightly raised edges suggested the eroded remains of old banks. This section of the canal appears older and only minimally altered during the Soviet period. The next section showed clear Soviet interventions, including large slabs of concrete.

Fig. 9. View of the possible secondary canal GS046 from NE

Beyond this point, the canal took on the unmistakable appearance of a natural stream: meanders, high eroded banks (up to more than 3 m high), and collapsed vertical sections. Its morphology closely resembles natural streams in the area, such as parts of the Jangirsu and the Gezaldere rivers. Soviet and post-Soviet modifications were visible at multiple points, including metal and concrete pipes crossing the channel.

We eventually reached a broad area where several watercourses converge, all of them heavily altered by modern interventions. With no clear traces of an ancient structure, we turned back. On the return route, we identified a stretch that might represent an undisturbed portion of the old canal. Here, five team members walked along the western bank, spaced roughly 10 m apart (the eastern bank was inaccessible due to a fenced orchard).

Despite the systematic approach, no archaeological material – either Sassanid or of any other period – was identified. The land is flat, sandy, and sparsely covered with Artemisia shrubs. The area appears to have remained uncultivated for a long time, limiting visibility and reducing the likelihood of surface finds. No modern debris was present either.

In the section that appears best preserved:

- the maximum width of the canal bed is about 11 m;
- the deepest central portion, now functioning as a makeshift road, is roughly 4.50 m wide;
- the distance between the tops of the raised banks reaches 24 m.

Further north the canal disappears entirely. Both field observation and satellite imagery confirm that this portion has been completely filled in. We also explored the area downstream in the hope of identifying a continuation, but the visible watercourse appears entirely natural and meandering. This is likely the Uzundere River, which eventually converges with the Mariini Canal.

Thus, despite extensive survey work, no undisputable proof of the Sassanid-period canalisation system was recovered. Nevertheless, some stretches of the two above described canals, particularly those with raised banks and a more regular alignment, remain the most plausible candidates for an ancient hydraulic system, later repeatedly modified until Soviet times.

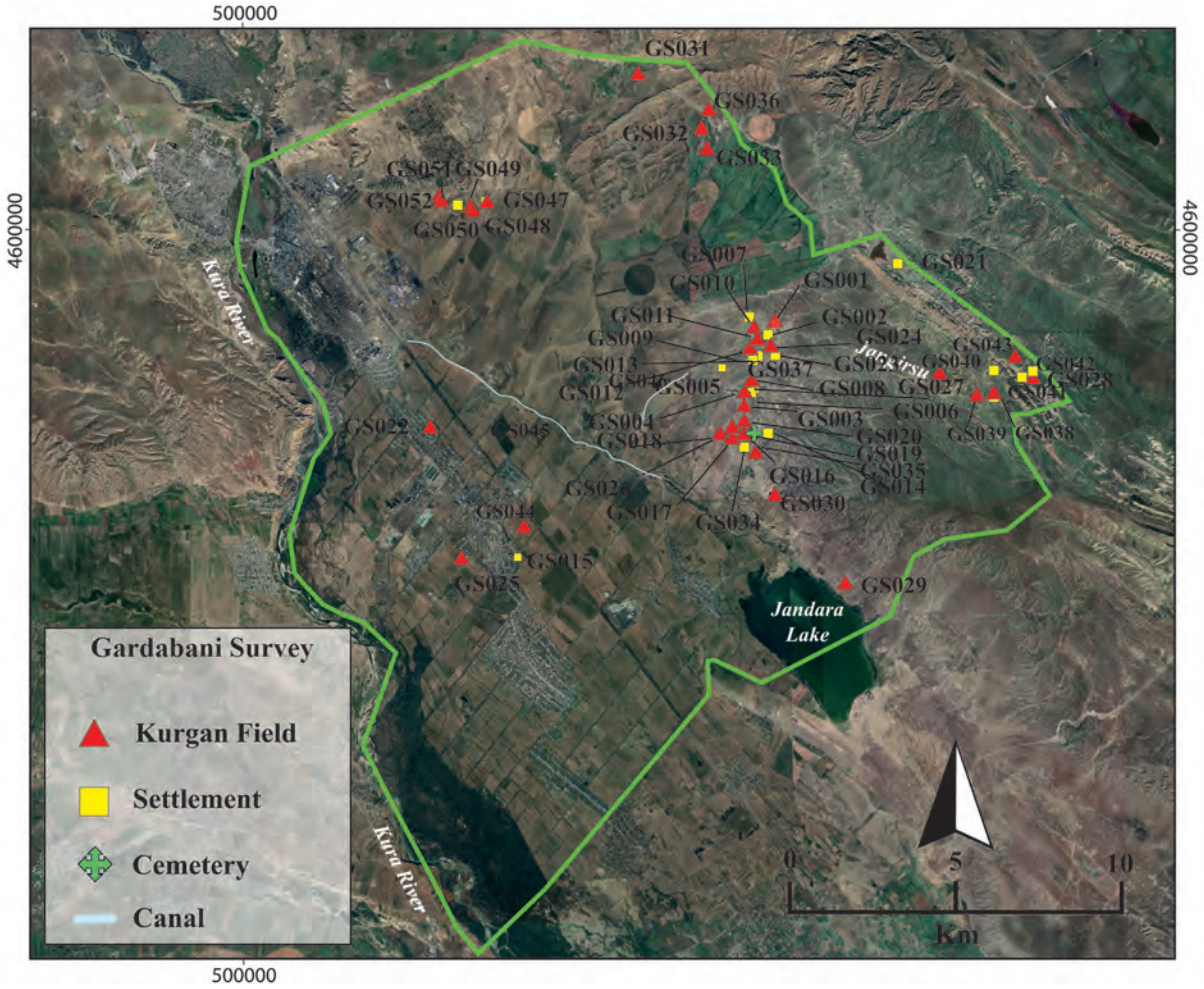
The results of the 2025 survey allowed to confirm and further specify the pattern of anthropic occupation which had already emerged during the previous seasons (**Fig. 10**). This implies a rather sparse occupation, characterised by relatively few sites of often small dimensions, which are generally heavily disturbed, and at times almost completely obliterated by modern activities. They also confirmed that fields of kurgans represent the most frequent monuments in the region, and that they especially concentrate at the base or on the lower slopes of the hilly ranges which border it to the north and to the east, with less frequent occurrences in the northern part of the Kura valley. The date of the kurgan fields is still unknown, but a considerable part of them probably belongs to the LB/EIA.

Settlements, on the other hand, are found both in the hilly/mountainous region to the east (where they mainly date to the Late Bronze/Early Iron Age) and, very sparsely, on the plain of the Kura and on some of its tributaries, where very little of them has remained due to the intense modern agricultural exploitation, and where they appear to mainly date to the Hellenistic/Late Antique and Medieval periods. Large parts of the territory, especially in the central portion of the district and on the eastern plateaus bordering the “coloured mountains” appear to have been devoid of any settled occupation for most of their history, and to have mainly been used as transit areas or as seasonal pastures.

The virtually complete absence of any surface material predating the Late Bronze Age (no single sherd was discovered during the 2025 survey, and even obsidian finds, impossible to precisely date but generically suggesting early occupation are very scanty) remains puzzling, if one considers that the neighbouring Marneuli district is very rich, for instance, in Late Neolithic sites. On-going geo-archaeological and paleo-environmental research may be able, in the future, to shed light on the reasons of this absence, whereas excavation of one or more Kurgan Fields would allow to better clarify the Late Chalcolithic to Middle Bronze Age occupation of the region, as some of these sites may indeed belong to these otherwise still undocumented periods.

An important historical question on which the 2025 survey yielded some potentially significant information concerns the Hellenistic to Medieval occupation of the region. The likely identification of part of the Late Antique irrigation system mentioned by historical sources represents a starting point for future, more strictly focused research. The preferential location of sparse sherds belonging to late periods over a broad NS-oriented band of territory extending between the course of the Kura River and the feeding basin of the Mariini canal (including such supposed secondary canals as GS046) is indeed intriguing in this respect On the other hands, the number of such sherds is admittedly very limited, and no real settlement site belonging to these periods has been identified, up till now, in this area, not to speak of more monumental remains. One possible explanation is that human settlement during these period concentrated on few administrative centres located in favourite positions, which are now covered by modern settlements (see "no access areas" on **Fig. 2**, above) – Rustavi and Gardabani (which not by chance correspond to the end points of the Mariini canal) representing the most obvious candidates for these – while anthropic occupation of their rural hinterland was at best sporadic and ephemeral, as it indeed still is nowadays.

Fig. 10. Map of the Gardabani survey region with indication of the sites discovered in the 2023-2025 seasons



Analysis of the Materials from the Autumn 2025 Survey

Pottery and small finds from the survey were processed by Michela Ferracin with the help of other members of the team at the expedition house in Gardabani. All diagnostic materials were drawn, photographed, measured and described, and all relevant data were inserted into a dedicated database.

The sherds collected during the survey amounted to 616, 142 of which were diagnostics. 112 of them were attributed to the EBA/EIA period (most of these were found on three settlement sites located in the mountainous area close to the north-eastern limit of the survey region), whereas the remaining ones date to different periods between the Late Iron/Hellenistic and the Medieval period. Exception made for the three above mentioned sites, material recovered during the survey was rare and extremely fragmentary.

In particular, most of the fragments collected in the Kura plain and the area between the latter and the piedmont hills were small undiagnostic fragments, therefore quite difficult to date precisely. Based on the colour of the fabric, which is mostly light to reddish and contains few fine-grained inclusions, most of them date between the Late Iron Age and the Late Antiquity period, with a minority component belonging to the Medieval period. On the other hand, any material earlier than the LBA (Neolithic to Middle Bronze Age) was conspicuously missing.

Fig. 11. Examples of LB/EIA pottery from sites GS041-GS042

Regarding the mountainous area in the Gareja steppe close to the Kakhetian border, the situation was completely different. All the three sites (GS040, GS041 and GS042) visited in this area yielded significant amounts of sherds, in large majority of the LBA/EIA period, to which a small component of Medieval sherds was sometimes associated. LBA/EIA sherds, in particular, were larger in size and better preserved, and included several diagnostic types and decorations. The LBA/EIA local assemblage exhibits strong similarities with that from the neighbouring Kakheti region, which is better studied, a fact which guaranteed a more precise dating. GS040 may be slightly earlier than the other two sites, which are probably contemporary and may date to the beginning of the EIA. Together, the two neighbouring sites yielded 393 pottery items, including 108 diagnostic ones. They allowed us to accomplish one of the aims of our season, that is to assemble a representative regional repertoire of diagnostic morphological types and decorations for the local LBA/EAI ceramic culture (**Fig. 11**).

As for small finds, they were quite rare, and most of them consisted of obsidian flakes. Exceptions were a few obsidian tools (**Fig. 12**) and fragments of basalt grinding stones.

At the end of the season, all the materials recovered during the 2025 survey were deposited at the Gardabani Historical Museum.

Fig. 12. Small fragment of obsidian blade from site GS040

WORK AT GARDABANI KURGAN FIELD (SITE GS001)

GPR Prospection

Based on the very promising results of the test carried out during the summer season on an area of 50 x 20 meters (**Fig. 13**) to calibrate the instrument, which revealed clear circular anomalies corresponding to the areas occupied by kurgans and other stone structures observed on the ground, on November 10th-11th Dimitri Akubardia, Nikoloz Metreveli and Davit Stiklauri, assisted by Levan Navrozashvili, Francesco Bianchi and other members of the team, completed the Ground Penetrating Radar prospection of two of the main kurgan clusters of the burial ground.

The first one, measuring 50 x 50 m, is located in the northern part of the main distribution area of the barrows and includes kurgans nos 5, 30, 39, 4, 35. The second, larger area lies in the southern part of the kurgan field, measures 100 x 65 m and includes kurgans nos 16, 17, 18, 19, 20, 21, 22, 23, 32, 52, 53, 56, and 57.

Data acquisition was carried out at 0,5-meter intervals in both the X and Y directions, providing high-resolution spatial coverage suitable for archaeological interpretation. The survey was performed using a GSSI SIR-3000 GPR system equipped with a 400 MHz center-frequency antenna (**Fig. 14**), which offers an effective compromise between resolution and penetration depth for near-surface investigations. The results of the prospection are presently being processed.

Fig. 13. Preliminary results of the GPR test carried out in summer 2025

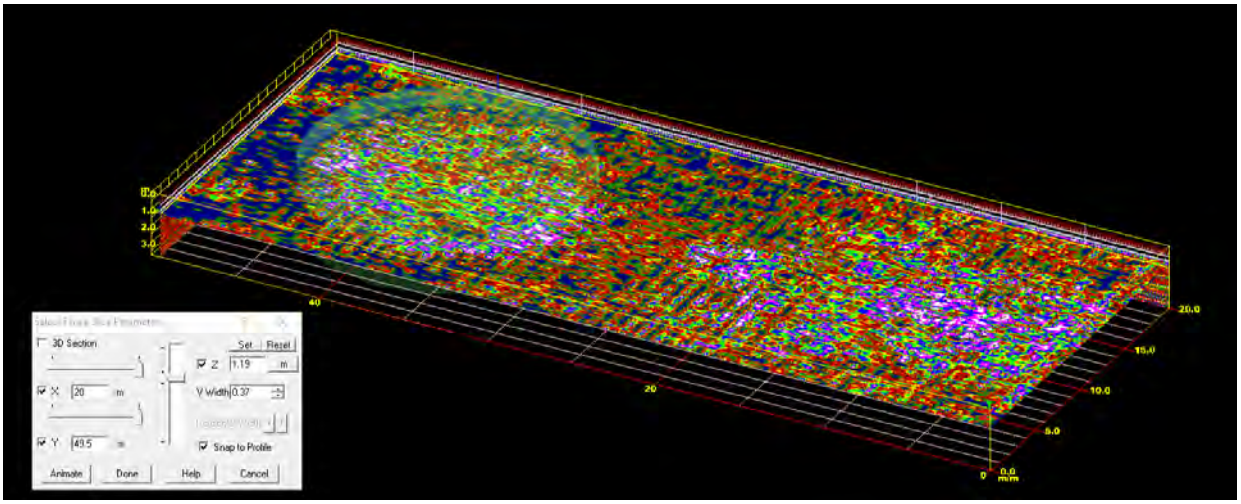


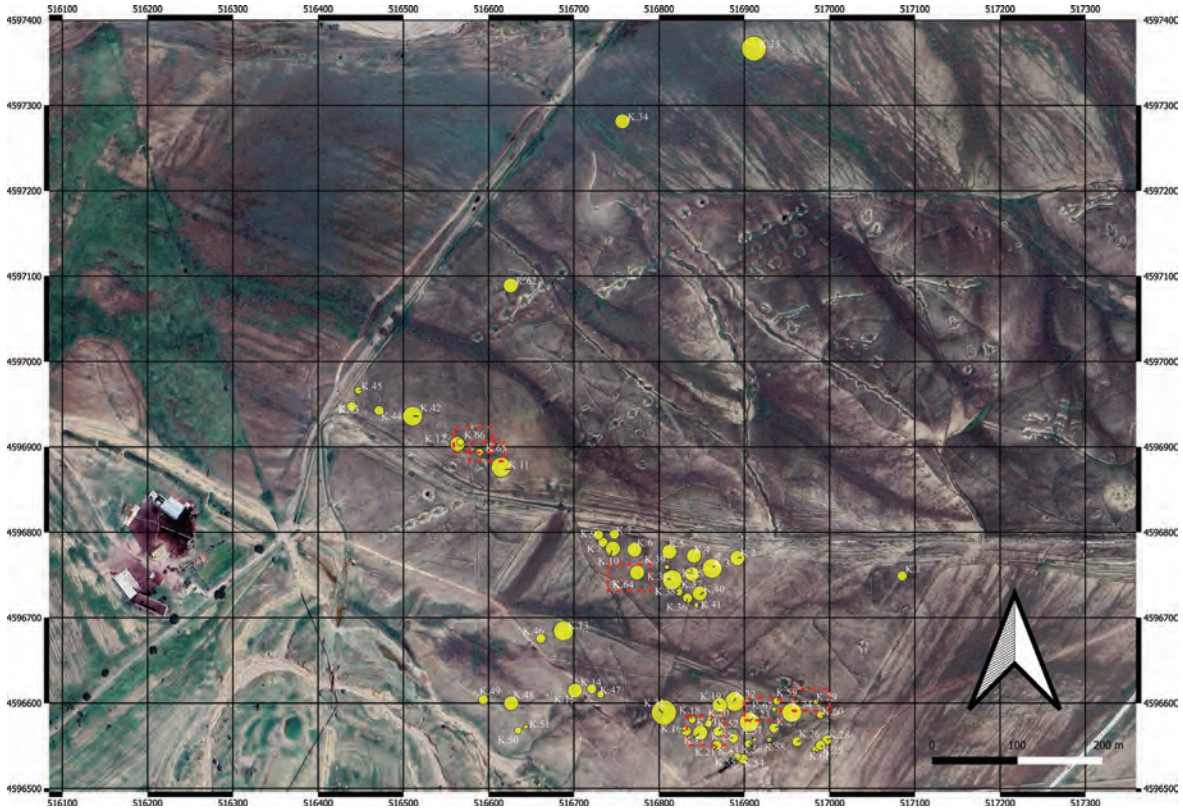
Fig. 14. GSSI SIR-3000 GPR system (left) and 400 MHz antenna (right)

Ground-truthing Aspects of the Layout of Kurgans identified through the Analysis of Drawings from Drone Photomosaics

Contemporary to the GPR survey, part of the team dedicated itself to the systematic ground-truthing of the circular features identified by Riccardo Fava – as part of his MA thesis – on the photomosaics derived from the drone images taken on the new kurgans (nos 64, 65, 66, 67) identified during the 2025 summer season: grass, grit, stone circles and circles highlighted by a slight change in soil colour and/or vegetation

density (**Fig. 15**). This work is part of an experimental test study aimed at understanding how much of the buried internal features of the different kurgans can be perceived from the surface with different levels of definition. Kurgans nos 29 and 52, identified during the previous seasons but resurveyed in summer 2025, were also re-checked on the ground.

Fig. 15. Updated map of the main kurgan distribution area of Gardabani Kurgan Field with highlighted location of the kurgans revisited in autumn 2025



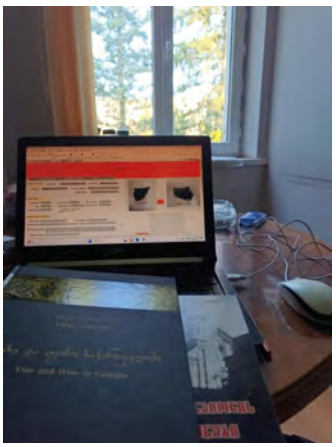
WORK AT GARDABANI HISTORICAL MUSEUM

On November 7th and 11th, Michela Ferracin, assisted by the personnel of the Museum completed the work initiated in summer 2025 by Veronica Basso with the aim of setting up a reference collection, in the form of a dedicated File Maker database, of pottery and small finds to be used for the material discovered by the Georgian-Italian team during the regional survey and future excavations at Gardabani Kurgan Field and other sites of the area.

She completed the photographic documentation of the archaeological finds exposed in the museum by photographing and describing some recent occasional finds from the Late Bronze/Early Iron Age site at Mikhailovka cemetery and other finds from the region (**Fig. 16**). She also translated the digital copy of the Museum Inventories kindly provided by Mrs. Mzevinar Ratian, who is in charge for the inventories books of the museum, who kindly explained to her the structure of the inventories. By the help of this, she set up the complete database of the finds.

Fig. 16. Examples of pottery sherds of different periods from the Gardabani Historical Museum: two sherds – probably dating to the EIA –, from Mikhailovka cemetery (above), two glazed sherds of the Medieval period from casual surface finds (below)

Fig. 17. Working on the pottery database



The database (**Fig. 17**) presently consists of 262 complete vessels, pottery sherds and objects (e.g. obsidian flakes, metal arrowheads and pendants) dating from the Late Bronze Age to post-Medieval times, most of them recovered by fortuitous finds in the area of Gardabani and adjacent villages. Each entry is equipped with new photos and contains a description and approximate date, based on information provided by the museum tags and inventory.

PHYSICAL ANTHROPOLOGY

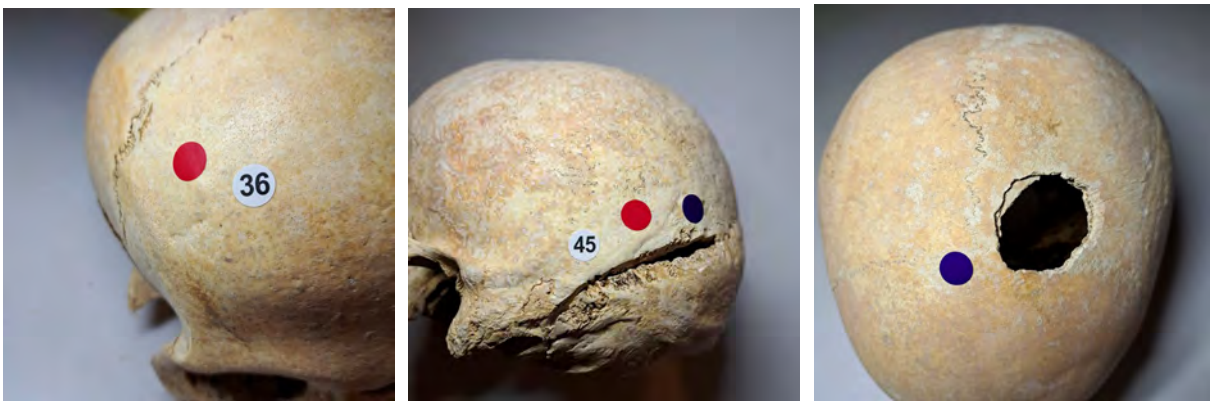
The work carried out in the field of Physical Anthropology includes several different activities. On November 8th-9th profs Francesca Bertoldi and Pier Francesco Fabbri took part in the international conference "Bioarchaeology of the South Caucasus" at Tbilisi, organised by the *American Research Institute of the South Caucasus* (ARISC), where they presented the results of bioarchaeological research carried out in the region during the last few years by the group of physical anthropologists affiliated to the GIGAP project.

From November 10th to November 13th Francesca Bertoldi, Pier Francesco Fabbri, Lia Bitadze and Shorena Laliashvili, assisted by Rebecca Noemi Capezzera, travelled to Borjomi where, with the on-line consulence of Giorgia Vincenti, they continued the study of the human remains from the Medieval Monastery of Berebis Saqdrebi housed in the Monastery of the Nativity of the Holy Virgin under the responsibility of Father Andria Tariadisi.

Finally, back in Tbilisi, on November 15th Bertoldi and Fabbri sampled human remains from different Georgian late prehistoric sites (Doghlauri cemetery, Berikldeebi, Brili, Tsaishi) for stable isotopes and DNA analyses with the aim of increasing the number of data for the general database of South Caucasian anthropological samples they are implementing (**Fig. 18**).

Fig. 18. Profs Bertoldi and Fabbri sampling human bones in Tbilisi

Fig. 19. Examples of cranial traumas: *antemortem* (left) and *perimortem* (centre and right)



Most of the time was dedicated to the study of Berebis Saqdrebi material. This year work specifically focused on cranial traumas. The team visually inspected 406 randomly selected skulls looking for cranial traumas. They only took into account those that have preserved at least 80% of the cranial vault, which includes the frontal, parietals, temporal squamas, and the upper part of the occipital (*planum occipitale*). Based on this criterion, 36 skulls were discarded and a final sample of 370 skulls was observed for traces of trauma.

These have been scored in two classes (**Fig. 19**):

- *perimortem* traumas, macroscopically showing no traces of healing or bone reaction;
- *antemortem* traumas, macroscopically showing at least some traces of bone reaction.

On a small sample of 18 skulls with *antemortem* traumas ad 13 skulls with *perimortem* trauma they recorded the location, the type of trauma and its characteristics, especially regarding its origin (blunt force versus sharp force trauma).

Preliminary results indicate that on the larger sample of 370 skulls (**Table 1**), those with at least one trauma are 91, i.e. 24.6% of the sample. *Perimortem* traumas were observed in 3.2% (12/370) of the individuals and *antemortem* traumas occur in 22.2% (82/370).

Skulls (n)	With trauma (n)	With trauma (%)
370	91	24.6%
Table 1. Prevalence of cranial trauma		

Observed traumas amounted to 94 as two individuals had more than one trauma, while regarding the class of traumas (**Table 2**) 82 *antemortem* (87.2%) and 12 *perimortem* ones (12.8%) were observed.

	Traumas (n)	Antemortem	Perimortem
N	94	82	12
%		87.2%	12.8%
Table 2. Prevalence of *antemortem* versus *perimortem* cranial trauma			

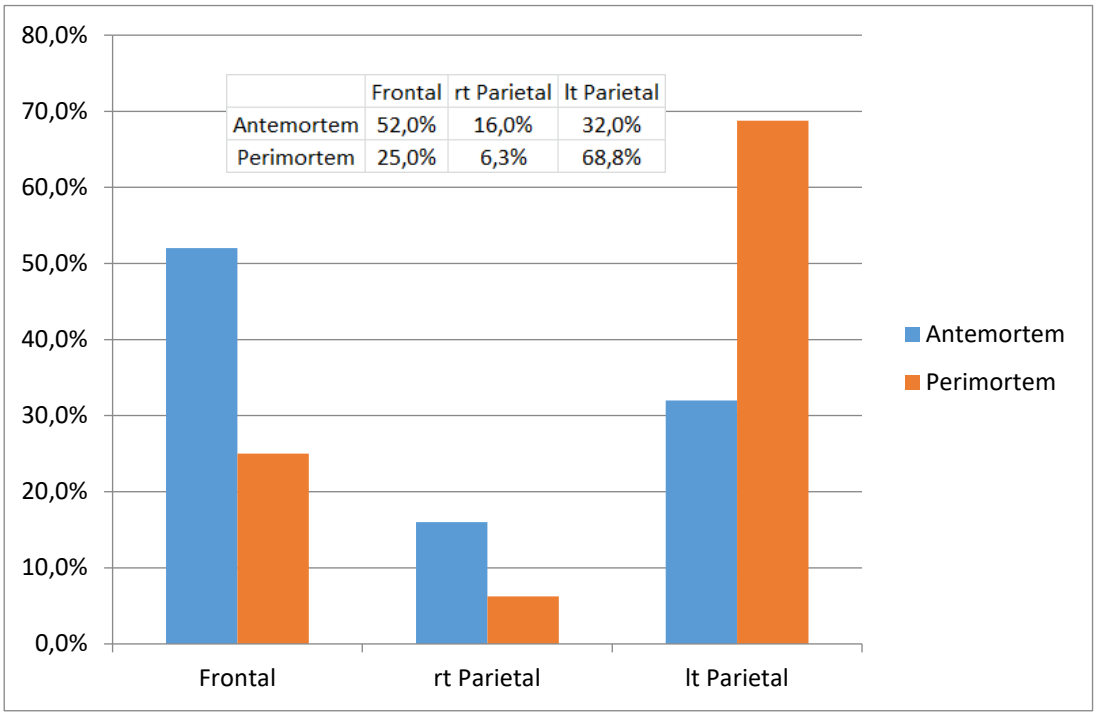
Regarding sharp force versus blunt force (**Table 3**), all the 18 *antemortem* traumas are due to a blunt force, as to the *perimortem* traumas, 13, all are a consequence of a sharp force.

Trauma	Sharp force n (%)	Blunt force n (%)
Antemortem	0 (-)	18 (100%)
Perimortem	13 (100%)	0 (-)

Table 3. Sharp force and blunt force traumas

Concerning trauma localisation (**Fig. 20)**, the majority of *antemortem* traumas (52.0%) are on the frontal bone, followed by the left parietal (32.0%) and by the right parietal. The majority of *perimortem* traumas (68.8%) are on the left parietal, followed by the frontal bone (25.0%) and by the right parietal (6.3%). The chi-square test between *antemortem* and *perimortem* trauma localisation is 5.1391, with a p-value (0.06998) close to the statistically significant threshold.

Fig. 20. Localisation of *antemortem* and *perimortem* traumas



To sum up, in the large sample (n = 370) of skulls the prevalence of cranial trauma is 24.6%. In the individuals, *perimortem* cranial trauma prevalence is 3.2% and *antemortem* cranial trauma prevalence is 22.2%. *Antemortem* and *perimortem* cranial traumas are clearly different as to type (100% blunt force for *antemortem* and 100% sharp force for *perimortem*), and near to statistical significance as to localisation: the majority (52.%) of *antemortem* traumas are on the frontal bone, and the majority (68.8%) of *perimortem* traumas are on the left parietal bone. Taking into account trauma type and localisation, it can be hypothesised that *antemortem* cranial traumas are mainly due to life accidents, while *perimortem* cranial traumas are basically due to interpersonal violence.

The team also sampled 28 subjects for ^{14}C dating and DNA purposes, choosing at least a couple of well preserved teeth per individual.

GEOARCHAEOLOGY

Geoarchaeological research was carried out under the supervision of Levan Navrozashvili and Nino Ushtashvili with the assistance of Ilia State University students Paata Chlaidze and Giorgi Arjevanishvili and students and the remote supervision of prof. Mikhail Elashvili. Due to technical problems (unavailability of means of transport), these activities had to be postponed to after the departure of the Italian team, but were nevertheless successfully carried out by the end of the year.
One day, December 9th, was dedicated to collecting samples from living beings from the Alazani River in Kakheti, to be used for ^{14}C analyses by prof. Elisabetta Boaretto (Weizmann Institute of Science, Rehovot, Israel) in order to estimate "reservoir effect" to calibrate the results of analyses carried out on the sedimentological samples from deep cores carried out by the team in 2023-2024 in the area. Fish samples were collected from four different locations. The collected species was identified as *Varicorhinus capoeta* (Georgian: kharmuli; common name: barbel). One sample was collected from each location, resulting in a total of four samples (**Fig. 21**).

The other foreseen activity of the geo-archaeological team (completing the core on the Jandara lake initiated during the expedition's summer campaign, which had been terminated at 5 m depth due to technical reasons) was carried out by the same group during the last week od December (22nd to 26th).

Fig. 21. Fish samples for 14C dating collected from the Alazani River

OTHER ACTIVITIES

On Monday, November 24th Elena Rova had a meeting with Mrs Tea Osiani (Head of the National Agency for Cultural Heritage Protection of Georgia), to whom she presented the results and the future aims of the GIGAP project. On Wednesday November 19th the GIGAP team visited Khashuri Historical Museum and had a meeting with the responsibles in order to plan the final study by members of the team, in summer 2026, of pottery and small finds from the 1011-1012 Georgian-Italian excavations at Khashuri Natsargora.

CONCLUSIONS AND FUTURE PERSPECTIVES

The short autumn season of the expedition (**Fig. 22**) was very successful, first of all as it allowed to complete the first phase of the Gardabani Regional Survey. The generally good visibility, due to the scarcity of vegetation and the presence of ploughed fields during the late autumn allowed the team to document most of the "blank" areas which had been inaccessible during the previous campaigns. Not only were sixteen new sites thus identified and documented (which brings the total number of identified sites to 52), but we now have a reliable picture both of the chronological distribution, and the spatial patterning of human occupation in the region. The next stage of the survey, to be carried out during the next years, will concentrate on specific microregions, on the documentation of specific features (for instance of individual kurgans within previously identified kurgan fields) and/or of apparently missing periods of occupation (e.g. the Neolithic to Middle Bronze).

Thanks to the discovery of abundant diagnostic material at the mountain sites nos. GS040-GS043 and to the completed processing of the finds hosted in the collections of the Gardabani Museum, great progress was also made in the establishment of a local list of diagnostic types for the Late Bronze and Iron Ages and, less so, for the later (Late Iron to Medieval) periods.

At the Gardabani Kurgan Field site (GS001) the last non-invasive investigations representing the first phase of our research project were also completed in autumn 2025. The excavation of some kurgans at the site, which we plan to undertake in summer 2026, will especially characterise the project's second phase. This will be mainly dedicated to verify and to integrate the information collected thus far with data recovered by more traditional archaeological methods, with a special focus on the use of micro-scale techniques for the analysis of the archaeological layers and of the finds.

Fig. 22. Group photo of the Autumn 2025 GIGAP team

Some progress was also made in geo-archaeological research, where we now have collected sufficient deep-coring samples to attempt a reconstruction of the sedimentological history of the target region and correlate it with the pattern of distribution of human occupation in the course of time. Geo-archaeological research is foreseen to continue during the next years along the same lines followed until now.

Bio-archaeological research mainly concentrated on the study of the assemblages from the Medieval monasteries of Borjomi region, which is supposed to continue in the future as an independent project, and on the collection of a reference database of finds and analyses results. In the course of the future campaigns the team of physical anthropologists is supposed to use the data collected thus far for the interpretation of the human osteological materials to be recovered from the excavations at Gardabani Kurgan Field.

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