

Report on the Activities of the First Season on the Georgian-Italian Lagodekhi Archaeological Project (2018)

Davit Kvavadze (Lagodekhi Museum, Regional Department of the Ministry of Culture, Sport and Youth), Elena Rova (Università Ca' Foscari Venezia)

Introduction

The first field season of the project of Ca' Foscari University of Venice (Italy) in cooperation with the Unit of Culture Sport and Youth of the Municipality of Lagodekhi (Georgia) took place from June 18th to August 1st 2018. The Italian team arrived in Georgia on June 19th and reached the town of Lagodekhi on June 21th. On July 29th the team returned to Tbilisi, and on August 1st the team flew back to Italy.

The members of the Italian team were the following: prof. Elena Rova (co-director of the project, chief of the Italian group), dr. Katia Gavagnin (post-doc), Laura Tonetto and Anna Chiara Muscogiuri (post-graduate students at the SISBA archaeology specialisation school), Andrea Titolo MA (PhD student at Rome University), Francesco Bianchi, MA, Chiara Mariotto and Andrea Milanese, BA (MA students at Ca' Foscari University), prof. Marilyn Kelly-Buccellati (UCLA University, Los Angeles), archaeologists, dr. Kristen Hopper (University of Durham, UK, survey specialist), and prof. Giovanni Boschian (University of Pisa, geo-archaeologist).

The Georgian team was composed of Davit Kvavadze (Director of the Lagodekhi Museum, co-director of the expedition), dr. Davit Darejanashvili, Magda Batiashvili and Tamar Bichashvili (BA students at Sokhumi State University), joined for a shorter period by Tatia Burtsuladze (MA student at Tbilisi State University). On July 6th-8th the team was joined by Lana Chologauri (Ph student at Tbilisi State University, formerly Erasmus student at Ca' Foscari), Nino Pataridze and Giorgi Kirkitadze (PhD students at Ilia State University), who took part in the survey, produced drone images of the site and assisted in translating some Georgian publications into English. Mr. Malkhaz Tamarazashvili drove the expedition minibus, and Mr. Zaza Tsodolishvili assisted with translations.

On July 17th the Italian team attended the lecture of the President of the Italian Republic Sergio Mattarella at TSU University in Tbilisi. On July 22 the team was visited by the Italian Ambassador at Tbilisi, His Excellency Dr. Antonio Enrico Bartoli, and by Mr. Jondo Mdivanishvili (Mayor of Lagodekhi), Mr. Zurab Japaridze (first deputy of the Lagodekhi Mayor) and Mr. Levan Qajaia (Head of the Lagodekhi Regional Department of the Ministry of Culture, Sport and Youth).

Aims of the season

The aim of the season was to obtain a preliminary evaluation of the potential of the Lagodekhi municipality in the Kakheti region of Georgia for a future multiyear archaeological project to be carried out in cooperation with the local authorities. The municipality extends over an area of ca 900 km² at the eastern limit of Georgia, near the present border with Azerbaijan (**Fig. 1**). It is located between the foothills of the Greater Caucasus range and the valley of the Alazani river, one of the main tributaries of the Kura, in the connection area between the alluvial fans of the Caucasus range and the river plain.



Fig. 1. Satellite view of the Lagodekhi Municipality (from Google Earth) with location of the main modern centres and of the Tseli Gorebi 5 site.

Kakheti is one of the richest archaeological regions of Georgia. The Alazani valley, in particular, is famous for the monumental barrow graves (kurgans) of the so-called Early Kurgan period – mid-second half of the II millennium BC – (Sh. Dedabrishvili, *Kurgans of Alazani Valley*, Tbilisi 1979). Besides the Early Kurgan period, other phases which according to previous scholarship are well attested in the region are the Late Bronze/Early Iron Age (2nd half of the second/early first millennium BC) (see K. Pitshelauri, *Principal Problems Concerning a History of the Tribes of Eastern Georgia of the 15th-7th Centuries B.C. (according to the archaeological materials)*, Tbilisi 1973) and the Chalcolithic period (5th/first half of the 4th millennium BC), which is also very well attested in the neighbouring regions of Western Azerbaijan. The latter, and its later phases in particular, represents an important, though still poorly understood phase in the history of the Southern Caucasus, which witnessed deep transformations and complex relations between the local communities and the proto-urban civilisations of Upper Mesopotamia. The relative and absolute chronologies of the different local cultures (Sioni, Tsopi), as well as the impact on them of the so-called Chaff-Faced Ware tradition, and the origins of the Kura-Araxes culture, are all still far from clear.

Contrary to other parts of Kakheti, the Lagodekhi Municipality remains relatively poorly explored. In spite of some recent sensational discoveries (see Z. Makharadze et al., *Ananauri Big Kurgan n. 3*, Tbilisi 2016), regular excavations in the region have been rare after the Soviet period, when the intense agricultural exploitation of the territory caused a deep impact on the preservation of archaeological remains. In particular, investigations carried out in the 1970s brought to the light a number of settlements of the Chalcolithic period close to the present village of Ulianovka/Tselgori (V. Varazashvili, *Rannezemledel' cheskaja kul'tura Juro-Alazanskogo Bassejna* [*The Early Farming*

Culture of the Iori-Alazani Basin], Tbilisi: Metsniereba 1992). Two of these sites, which are collectively known in literature under the name of Tsiteli Gorebi, were regularly excavated: Kviriatkhali – Tsiteli Gorebi no. 3 – (V. Varazashvili, 4th millennium BC. materials from the Iori-Alazani basin, in *Works of the Kakheti Archaeological Expedition IV*, Tbilisi 1980, 18-35) and Damtsvari Gora (V. Varazashvili, Settlement of „Damtsvari Gora” Result of the excavations carried out in 1980, in *Kakheti Archaeological Expedition’s works VI*, Tbilisi 1984, 19-26). Both of them consisted of low single period mounds, no more than 1-1.5 m high, measuring less than one hectare, which yielded abundant ceramic, lithic material and bone objects, but no architectural remains or preserved contexts with in situ material, to the exception of a number of storage pits, a few burials, and some enigmatic ditches. The lack of preserved architectural remains was tentatively explained with the fact that the upper part of the anthropic sequence had been destroyed by ploughing and intensive agriculture exploitation. Other sites in the Tsitelgori microregion were identified as dating to the same period (Tsiteli Gorebi nos. 1, 2, and 4, Shavtskhala, Mtserlebis Mitza, Nadikari, Natsargora) but only cursorily investigated; most of them appear to have been heavily damaged by modern activities. Since then, however, research in the area has been minimal.

This left several important questions unanswered, including, and perhaps most importantly, what is the general chronology of the Tsiteli Gorebi settlements. In fact, although they have been tentatively attributed by the excavators to the first half of the 4th millennium, unfortunately no ¹⁴C date could be collected from them. Therefore, their absolute date is uncertain (in fact they could be up to half a millennium earlier). It is also unclear whether they should be considered as strictly contemporary with each other or belong to different sub-periods, especially since parallels drawn by the excavators for their ceramic repertoire spans from the Ceramic Neolithic to the Late Chalcolithic period. Another open question is the relation of their pottery assemblage with the Chaff-Faced Ware tradition: although the excavation reports mention the presence of numerous vegetal-tempered sherds, no typical shape of the Leyla Tepe/Berikldeebi horizon could be recognised among the published materials. Finally, the meaning of this cluster of settlements at a short distance from each other in the framework of the general settlement patterns of the Late Chalcolithic period in Eastern Georgia and their relation with the surrounding general environment is still to be understood.

As we were informed by Davit Kvavadze (head of the local Museum) of the presence of a further, until now never investigated settlement of the Late Chalcolithic period in the Tsiteli Gorebi area, we decided that one of the aims of our first season would be to carry out explorative soundings there. This would allow us to test its potential for larger scale excavations, capable of answering some of the general questions outlined above, during the following seasons. Work at the site started on July 3rd and was closed on July 28th.

The second – and main – aim of the season was to gain a general view of the distribution and state of preservation of archaeological sites in the Lagodekhi municipality. This will involve a multi-year programme of surface investigations, whose ultimate aim will be to analyse developments and changes of the anthropic presence within the region in a *longue durée* perspective, in their relation with the changing natural environment and in comparison with the neighbouring areas. As a first step in this direction, a short geo-morphological survey of the area was carried out under the responsibility of Prof. Giovanni Boschian, and a preliminary archaeological survey under the responsibility of Dr. Kristen Hopper, assisted by Andrea Titolo. This involved both extensive survey (visiting and recording sites that were identified through published literature, the remote sensing of satellite imagery, and Soviet period 1:25000 topographic maps drawn in the early 1960s and based on aerial photographs from 1954-1955), systematic pedestrian survey of selected 50 m long transects located near the site chosen for excavation (Tsiteli Gorebi 5), and intensive surface collection at the latter.

In spite of the loss of some working days due to the heavy rain which made the access to archaeological sites virtually impossible, the work of the expedition could be carried out regularly and with very promising results in view of its future developments.

Excavations at Tsiteli Gorebi 5

The excavated site belongs to the cluster of Late Chalcolithic sites situated in the surroundings of the Ulianovka/Tsitelgori village. In spite of our efforts, it was until now impossible to locate all the different sites mentioned in the old publications precisely, with the exception of Damstavri Gora, which was unequivocally identified with a presently obliterated site at UTM 38N 596423 E 4616262 N. In particular, we were not able to ascertain the correspondence of the sites

indicated as Tsiteli Gorebi 1, 2, and 4 with the dots marked on the plan in Varazashvili's report (**Fig. 2**). For this reason, we decided to assign the new site where we worked the name of Tsiteli Gorebi 5.

The site corresponds to no. 21 of the Lagodekhi Survey (LS021). It is located at UTM 38N 598828 E 4614070.00 N, in Field No. 56.06.58.221 (cadastre number) belonging to Mr. Vano Mchedlidze. Its maximum elevation above sea level is 204.82 m. It lies in the flat plain ca 4.5 km to the SE of the Tsitelgori village, between the dirt road running southwards from the military checkpoint east of Tsitelgori and the Georgian-Azeri border. The site is presently occupied by a large wheat field. It consists of a low mounded area oriented NE-SW, which emerges of ca 1.30 m on the surrounding plain (**Fig. 3**). The site has been subjected to repeated ploughing, which probably flattened its top and spread archaeological materials

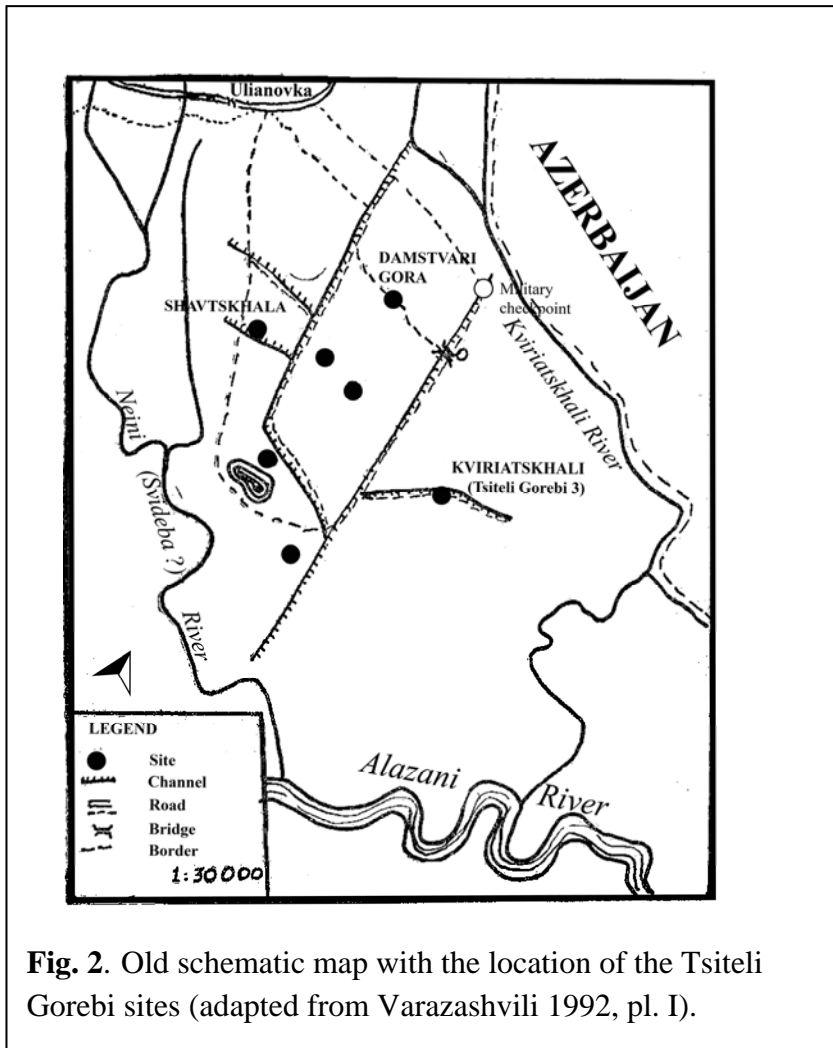


Fig. 2. Old schematic map with the location of the Tsiteli Gorebi sites (adapted from Varazashvili 1992, pl. I).

over the surrounding area. It presently occupies a maximum surface of ca 1.60 hectares, corresponding to triangular area of 165 x 170 x 138 m. It is characterised by two low elevations, a larger one to the NE and a smaller one to the SW, separated by a 20 m wide slightly depressed area. A modern drainage channel running SW-NE cuts the site's southern part. The area located beyond the channel is flatter, probably because it has been more affected by ploughing.

At the beginning of our activities, the wheat field had just been harvested. After removing the wheat stubble, the site was measured and a contour plan of it was produced by differential GPS. During the following days, aerial photographs were also taken by drone in order to produce a photogrammetric plan and digital elevation model (DEM) (see Fig. 10). Finally, intensive surface collection was also undertaken over the site's whole surface, in an attempt to more accurately define the limits of the ancient settlement (**Fig. 4**). In spite of the low visibility due to heavy vegetation, results were quite satisfying, and suggested a maximum extension of ca 2 ha.



Fig. 3. View of Tseli Gorebi 5 before the beginning of excavation, from NW.

In order to choose the most favourable places for placing the excavation areas, advantage was taken of the exposed section along the modern drainage channel, which was cleaned and drawn in three different locations at a distance of 20 m from each other. On this basis, the site's general stratigraphy appeared to be very similar to that of the neighbouring settlements excavated by

Varazashvili in the 1970s, and to comprise: 1) an up to 40-60 cm thick humus layer disturbed by ploughing, 2) a 20-40 cm thick compact yellowish layer with sparse anthropic remains, 3) an up to

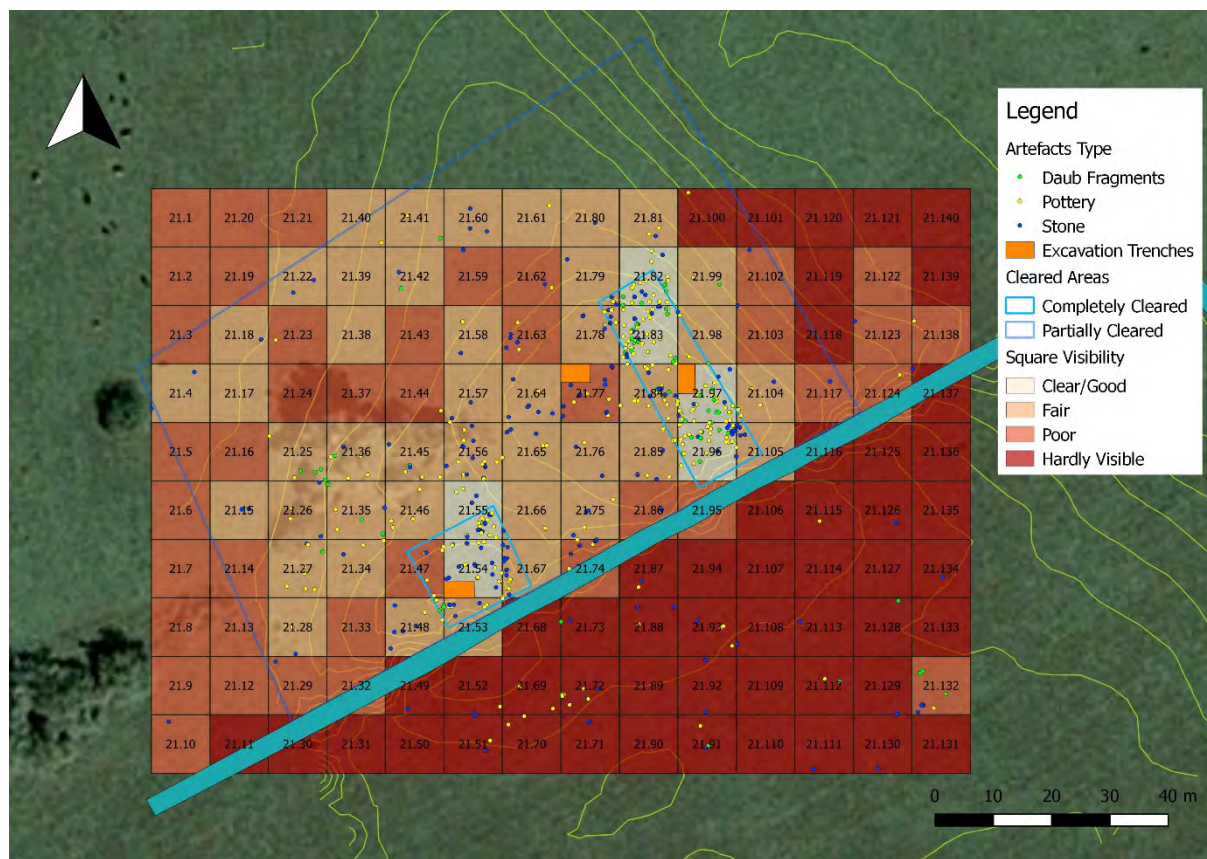


Fig. 4. Tseli Gorebi 5: results of Intensive Site Survey, highlighting visibility factors.

110 cm thick compact yellow layer, almost completely devoid of any archaeological materials, into which some pits (possibly graves) had been dug; 4) a 15-20 cm thick layer of grey-brownish silt, and 5) a brownish-greenish sandy layer. Layers 4 and 5 were completely sterile.

A concentration of sherds and lithic material (mainly obsidian) was observed at the interface between the first and the second layer, suggesting that the relevant occupational levels had been disturbed and almost completely obliterated. The first section from the SW, roughly corresponding to the "secondary mound", yielded particularly abundant material; in addition, three possible pits or graves were located close to it on the channel section. The last section, located in approximate correspondence to the "main mound", yielded less material, but some possible fragments of building material (daub) were located within the otherwise almost sterile layer. On the basis of this preliminary information, we decided to open three 5 x 3 m excavation areas (Soundings 1, 2 and 3) on top of the mounded area (**Fig. 5**).

Sounding 1, oriented in EW direction, is located in rough correspondence with the first artificial section, close to the site's western limit and near the top of the "secondary mound", ca 5-8 m N of the drainage channel (quadrant 097.099c), A 2.70 m thick sequence of layers were excavated, from alt. 204.55 to alt. 201.85 (**Fig. 6**). Archaeological material concentrated in the

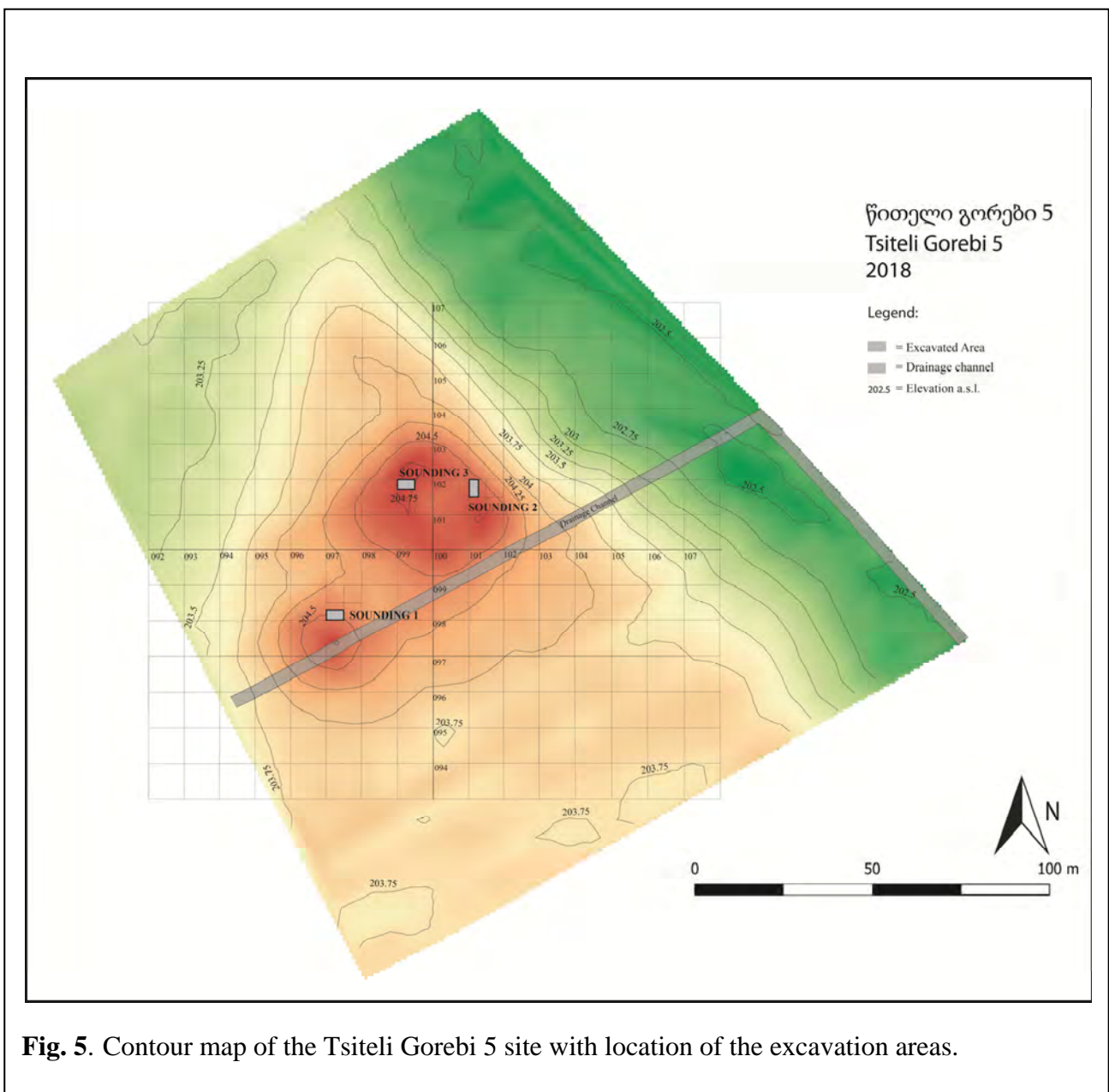


Fig. 5. Contour map of the Tseteli Gorebi 5 site with location of the excavation areas.

uppermost 90 cm of the sequence, the remaining of which was composed of natural deposits.

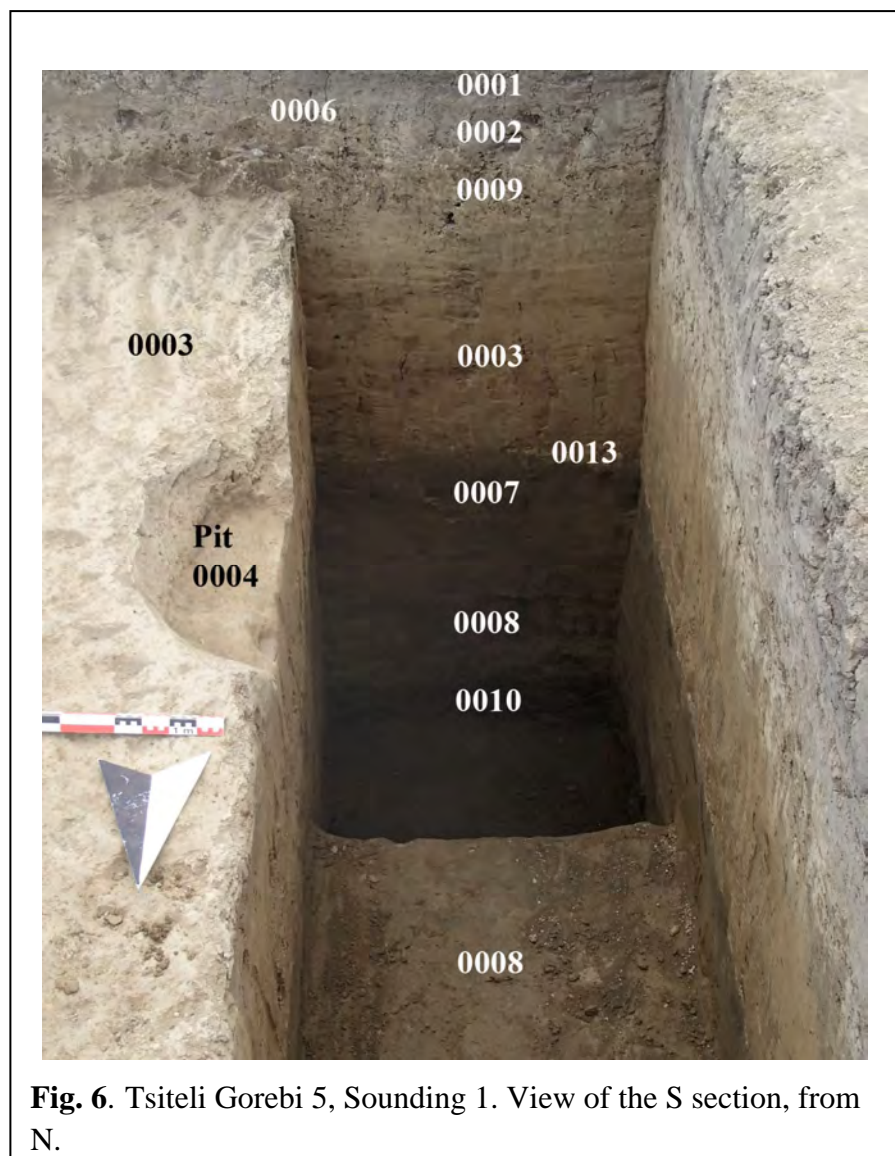
The 20-30 cm thick surface soil (locus 0001) was underlain by a 10-20 cm thick layer of dark brown soil, still affected by repeated ploughing (locus 0002), which contained small potsherds, obsidian flakes, small daub fragments and animal bones. A special concentration of material was

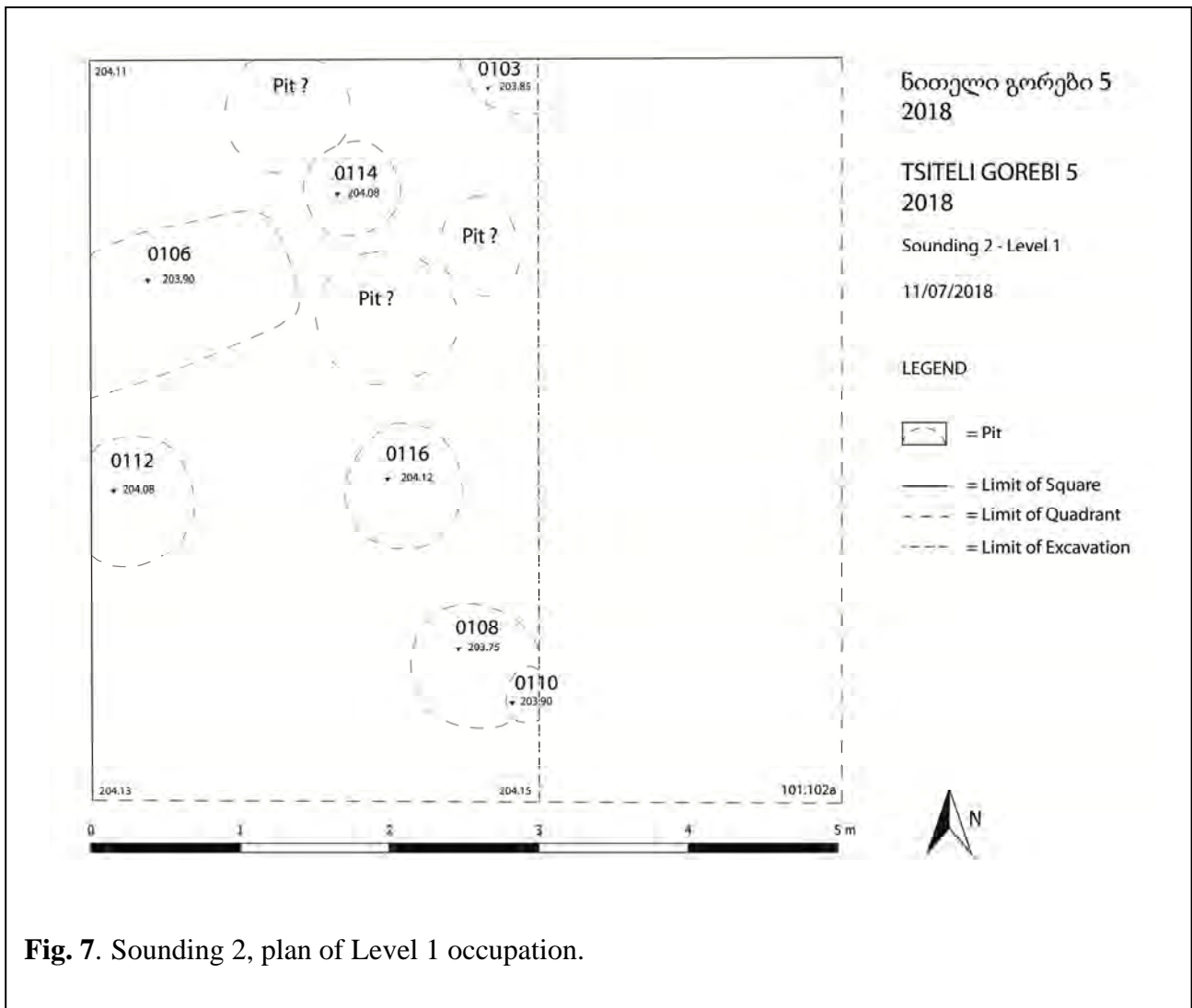
observed at the interface (locus 0006) between this layer and the following one (locus 0009, also 20-30 cm thick), which consisted of clayish soil of yellowish colour with interspersed darker patches, and also contained similar material. Two pits (loci 0004, 0011) had been dug from this layer into the underlying natural soil. This comprised: 1) a 70 cm thick accumulation of yellowish clay (locus 0003), separated by a whitish line (locus 0013) from 2) a 20-25 cm thick accumulation of grey clayish deposits (locus 0007), 3) a 90 cm thick sandy layer of greenish colour (locus 0008), and 4) a very dark grey sandy layer (locus 0010), whose bottom was not reached. The lowest part of the sequence (70 cm) was excavated only on a small sounding measuring 1 x 1 m.

The anthropic sequence was more substantial in Soundings 2 and 3, where virgin soil

could unfortunately not be reached at the end of the season due to the unfavourable weather conditions during the last two weeks of excavation.

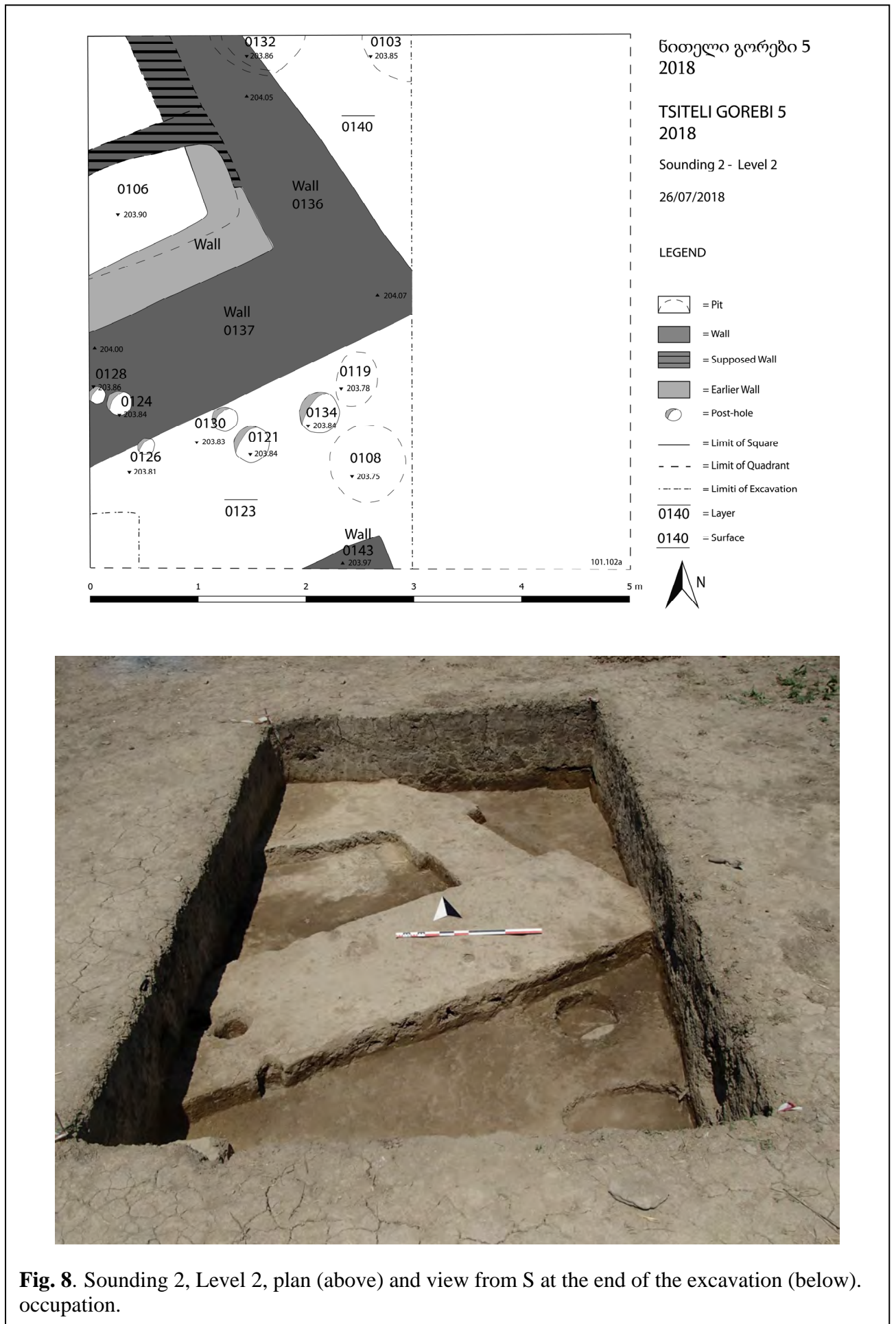
Sounding 2, oriented NS, is located in quadrant 101.102a near the site's eastern limit, at a distance of 40 m from Sounding 1 and 19-20,5 m N of the drainage channel, close to the third artificial section. The surface and subsurface layers (loci 0101, 0102), were severely disturbed by ploughing, but yielded exclusively Chalcolithic artefacts. They reached a total depth of 35-50 cm from the top soil (which lay at a max alt. of 204.74 m a.s.l.), and were underlain by a filling (locus 0118) of yellowish clayish soil, into which several pits of different shapes and dimensions had been cut. The largest of them, locus 0106, had a rectangular shape with rounded corners; its filling consisted of compact grey soil. The remaining pits were smaller, and mostly of rounded shape. All of them contained very little material; this was exclusively of Chalcolithic date, although we cannot absolutely exclude that the pits had been dug at a later time. Be that as it may, they have been considered to belong to the same general level (Level I) (Fig. 7).

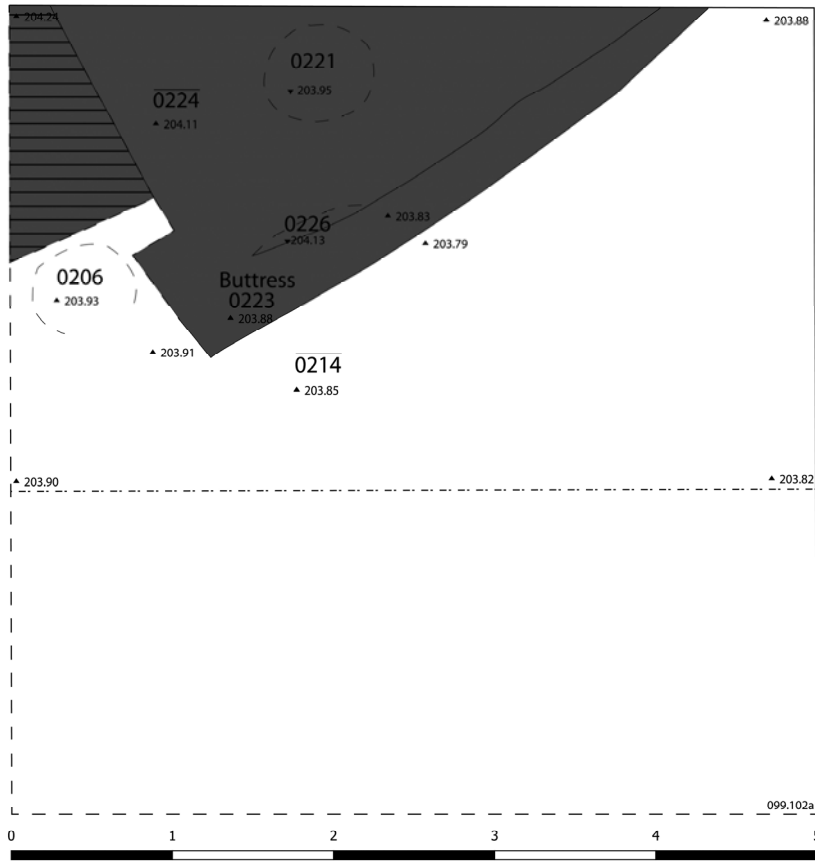




The top of the next level (Level 2) lay at approximately 204.00 m a.s.l. (**Fig. 8**). The level was not only cut by several pits (loci 0132, 0119, in addition to 0103, 0106, 0108 from Level I), but also by three couples of post-holes of different dimensions: 0121 and 0134 (diameters 27 and 34 cm), 0124 and 0130 (diameter 22 cm), and 0126, 0128 (diameter 15 cm), whose meaning is not clear; they may represent what remains of an occupational layer which has completely disappeared.

Level 2 was characterised by a clear distinction into areas of darker, softer soil (loci 0123, in the SE part of the excavated area, 0140, in its NE corner, and 0141, to the S of the cut of pit 0106), rather rich in finds, and an irregular area of harder, yellowish compact soil, which extended over its central part. Upon careful cleaning, this turned out to represent the degraded top of two large clay walls (loci 0136 and 0137) running perpendicular to each other in NW-SE and respectively SW-NE direction. The faces of the walls were not to be clearly outlined, but the change in colour and texture of the sediments was quite clear, as the walls consisted of almost pure compact clay of yellowish colour. An area of yellowish soil within filling 0123 leaning against the S face of wall 0137 may represent what was left of a possible buttress protruding from it. There probably was a third wall making a corner with 0136 and running parallel to 0137 ca 80 cm to the N of it, which had been almost completely obliterated by pit 0136. A small part of another possible contemporary wall (locus 0143) was found in the SE corner of the sounding; interesting enough, from what could be seen in the section this may have been formed of quadrangular blocks of clay ("bricks") of squarish shape.





წითელი გორები 5
2018

TSITELI GOREBI 5
2018

Sounding 3 - Level 2

26/07/2018

LEGEND







-  = Pit
-  = Wall
-  = Supposed Wall
-  = Limit of Square
-  = Limit of Quadrant
-  = Limit of Excavation
- 0214 = Layer
- 0214 = Surface



Fig. 9. Sounding 3, Level 2, plan (above) and view from E at the end of the excavation (below).

The fillings of Level 2 were excavated down to alt. 203.90-85 without reaching the base of the walls and without encountering any floor or surface; as a consequence, it is impossible to know at what height the walls were preserved and whether they had been built directly on the virgin soil or rested on an earlier anthropic level, as the presence under the bottom of pit 0106 of a rectilinear limit with slightly diverging orientation from the Level 2 walls may lead to suppose.

Sounding 3, oriented EW, lies in quadrant 099.102a, 15 m west of Sounding 2, on top of the "main mound", close to the site's highest point. The present surface is slightly sloping in eastern direction, from alt. 204.84 to alt. 204.69. The surface layer (locus 0201) is ca 20 cm thick, composed of dark brown, soft, homogeneous soil. It overlays a ca 20 cm thick subsurface layer (Loci 0203, 0204, 0217) of similar texture but more greyish in colour. This upper part of the stratigraphical sequence appears to be rather disturbed; this is the only sector of the excavation where, besides a large majority of Chalcolithic artefacts, a few later materials (some iron fragments, one possible Bedeni sherd) have been recovered.

A less disturbed archaeological level (Level 2) was met with around alt. 204.35 (**Fig. 9**). This was cut by a number of pits (0208 in the centre of the N part of the sounding, 0210 in its NE corner, 0212 in its SE part, and 0215 at its E limit), which had probably been dug from a later level, and the upper part of which had been completely lost (Level 1). The southern part of the excavated area was occupied by a filling of dark brown, soft soil containing some fragments of yellow clay (locus 0214). This contained abundant Chalcolithic pottery, obsidian flakes, animal bones, and a pendant. The recovery of an iron object and of a fragment of Medieval glazed pottery suggests that either the layer is still partially mixed, or that a pit has been missed in the course of excavation. The northern part of the excavated area was occupied by a nearly triangular area of hard, compact, yellowish clay (locus 0220), separated from filling 0214 by a line running in SE-NW direction.

Locus 2200 represented the damaged top of a large platform (Locus 0224), which continued beyond the northern and western limits of the trench. It at least partially composed of brick-like blocks of clay of different colours (dark brown and yellow) measuring 16 x 16 or 16 x 10 cm (**Fig. 10**). The face of the platform was difficult to articulate, but it is clear that it made a corner near the western limit of the excavation area.

The excavation of filling 0214 was interrupted at alt. 203.91 without reaching the base of the platform and without discovering any floor associated with it.

In spite of the slight differences in the stratigraphy of the three excavated soundings, it is clear that archaeological layers over the whole settlement area had been deeply affected by a combination of different post-depositional elements, among which not only deep-ploughing, but also earth-worms activities and repeated flooding appear to have played a prominent role. The resulting homogenisation of the sediments caused the dislocation of artefacts from their original position, a severe loss of site's stratigraphy and a low visibility of the still existing architectural



Fig. 10. Sounding 3. Detail of the structure of platform 0224 from SE.

structures. Artefacts and ecofacts collected at the site were mostly in a bad state of preservation (almost no organic materials had survived, pottery sherds were quite small and rather damaged, animal bones were on the whole well preserved, but heavily mineralised and in small fragments).

This unfavourable conditions are clearly a general feature of the Tseteli Gorebi microregion, as they find a precise correspondence in the descriptions of the previous excavators working in the area. They provide a reasonable explanation of the fact that no architectural remains had hitherto been noticed at these settlements, and invite to caution in drawing general conclusions about the ways of life of the ancient population from their apparent absence. On the other hand, it is hoped that awareness of this problem and an increased attention in the course of excavation may result in the future discovery of other poorly preserved architectural remains. In fact, the considerable dimensions of the walls and platforms uncovered in Soundings 2 and 3 might suggest the presence at the site of large-scale architecture. Another hint in this direction are some rectilinear marks visible in the drone photographs of the site to the NE of Sounding 1 (**Fig. 11**). In fact, if these indeed correspond to ancient structures, which is doubtful because they run suspiciously parallel to modern ploughing bands, their length would reach up to 20 m ca.



Fig. 11. Detail of the drone photograph of Tseteli Gorebi with superimposed grid and excavation areas and highlighted possible remains of monumental architecture.

On the basis of a preliminary analysis, the artefact assemblage recovered in the three soundings appears to be quite homogeneous and almost identical in composition to that of the previously excavated sites of the Tseteli Gorebi cluster (Kviriatskhali and Damstavri Gora), and to find more general parallels at various sites of the so-called "Sioni-Tsopi" cultural complex (see A. Sagona, *The Archaeology of the Caucasus*, Cambridge: Cambridge University Press 2017, 203 ff.;

B. Lyonnet, Rethinking the 'Sioni Cultural Complex' in the South Caucasus (Chalcolithic Period): New Data from Mentesh Tepe (Azerbaijan), in A. Batmaz et al. (eds.), *Context and Connection: Essays on the Archaeology of the Ancient Near East in Honour of Antonio Sagona*, OLA 286, Leuven 2018, 547-567; L. Nebieridze, *The Tsopi Chalcolithic Culture*, Studies of the Society of Assyriologists, Biblical Studies and Caucasiologists 6, Tbilisi: Artlines 2010).

Pottery (information provided by Laura Tonetto) is quite homogeneous in fabric, morphology and decoration (**Fig. 12**). It is always handmade and of very coarse quality; walls are generally rather thick, even if some fragments with a thinner wall, generally belonging to small vessels, have been observed. The fabric is invariably characterised by the presence of a large amount of mineral inclusions of medium or large size. Interestingly enough, no fragments of "Chaff-faced Ware" have been recovered, and occasional vegetal inclusions have been observed only in three sherds.

In spite of the overall fabric homogeneity, sherds have been tentatively divided into three different ware groups (Light Brown/Orange Ware, Red Ware and Grey Ware) mainly on the basis of fabric and surface colour and surface treatment. Light Brown Ware is the most frequent (447 fragments, less than 10% of which are diagnostic types). The fabric is mostly fully oxidised, although some sherds exhibit a grey core; the outer surface is orange or brown with yellowish shades (5YR 5/4 reddish brown, 5YR 6/6 reddish yellow). Sometimes the surfaces are smoothed and covered by a brown slip. With 132 sherds, only 5 of which are diagnostic types, Red Ware comes next in frequency. Its fabric is fully oxidised. Examples are characterised by a reddish surface (5YR 5/6 yellowish red, 5YR 4/6 yellowish red); the surface of fragments belonging to small-size vessel is often carefully smoothed and sometimes covered by a reddish brown slip and/or slightly burnished. Grey Ware is the least common, being represented by 101 sherds, about 10% of which are diagnostic types. The surface has a grey colour (GLEY 1 6/N grey, 5Y 3/2 dark olive grey) and is only rarely smoothed; the core is reduced.

As far as it is possible to judge (most sherds are very small and cannot be attributed to a precise vessel type), there are no significant associations between these wares and specific shape types. The morphological repertoire is rather limited: the most common types appear to have been large deep bowls with slightly curved walls and plain rims, and wide-mouthed pots with slightly outturned or vertical rims (**Fig. 12a**). Also well attested are high straight-walled trays provided with a line of holes made before firing in the upper part of the wall (so-called *mangal*) (**Fig. 12b**) and hole-mouth jars. Rims with flattened tops and elongated lug-like ledge protrusions (**Fig. 12c**) are relatively common, whereas there are only two rims which show nail impressions and two finger-impressed ones (**Fig. 12d**). Bases are generally flat or flattened; some of them show mats impressions on their lower surface (**Fig. 12e**).

Decorations are rare and mostly consist of small circular knobs in relief (**Fig. 12f**); two sherds exhibit rows of notch-like impressions (**Fig. 12g**) and two sherds are characterised by relief patterns reminiscent of those characteristic of the Shulaveri-Shomu culture (**Fig. 12h**). No example of painted decoration was recovered.

Besides observing the similarity of this material with that recovered at Kviriatskhali and Damtsvari Gora in the 1970s, it is difficult to attribute a precise relative date to it. The total absence of "Chaff-Faced Ware" and the presence of decorations in the Shulaveri Shomu tradition, together with the rarity of incised rims, which represent an hallmark of the Sioni culture, would suggest a rather early date within the Chalcolithic period, i.e. much earlier than the 1st half of the 4th millennium BC (Late Chalcolithic) suggested by earlier excavators. Parallels with recently excavated material from Mentesh Tepe (especially Period 2 and, less so, also Period 3) material, associated with ¹⁴C dates (B. Lyonnet, Rethinking the 'Sioni Cultural Complex' in the South Caucasus, cit., 554-561; eadem, in B. Helwing et al., *The Kura Projects. New Research on the Later Prehistory of the Southern Caucasus*, Archäologie in Iran und Turan 16, Berlin: Dietrich Reimer Verlag 2017, 144-147) may in fact suggest a date in the first half of the 5th millennium.



a



b



c



d



e



f



g



h

Fig. 12. Selection of ceramic sherds from Tsiteli Gorebi 5.



Fig. 13. Examples of chipped lithics from Tsiteli Gorebi 5.

The lithic assemblage (**Fig. 13**) is almost exclusively composed of obsidian, with a small component of tools of dark grey quartzite or microcrystalline rocks of volcanic origin, and a very small amount of flint tools (bottom right). Obsidian occurs in different colours – from almost transparent to opaque –, in various shades of grey and black and brown-speckled. This may suggest that different sources were used by the local population, but only provenance analysis will be able to confirm this hypothesis. The majority of the assemblage consists of unretouched flakes, some of which show possible use wear. The remaining items are irregular tools on flakes or blades, which

exhibit a not very accurate marginal, steep, or semi-steep retouch. Most of them may be described as generic bladescrapers. The presence of a few nuclei (bottom centre) and of numerous small flakes suggests *in situ* processing of the raw material.

A stone mortar and several bone awls obtained from half-sectioned metacarpal bones of caprines and bovines (**Fig. 14**) deserve being mentioned among the very few remaining finds.



Fig. 14. Bone awl from Tsiteli Gorebi 5 (0123-M-7).

Lagodekhi Survey 2018 (by Kristen Hopper and Andrea Titolo)

Introduction

Between the 22nd June and 28th July a landscape survey was undertaken in Lagodekhi Municipality, Kakheti, Georgia. The survey was led by Kristen Hopper (Durham University), assisted by Andrea Titolo (La Sapienza University) in collaboration with Davit Kvavadze (Director of the Lagodekhi Museum) and Elena Rova (Ca' Foscari University of Venice), co-directors of the project. Members of the Ca' Foscari Team including Laura Tonetto, Anna Chiara Muscogiuri, Andrea Milanese, Francesco Bianchi, Chiara Mariotto and Katia Gavagnin participated in various aspects of the survey, as did Magda Batiashvili and Tamo Bichashvili (Sokhumi State University). For one day, Giorgi Kirkitadze and Nino Pataridze from Ilia State University and Lana Chologauri from Tbilisi State University also participated.

The survey area was defined by the boundaries of Lagodekhi municipality and is roughly 900 km². The border with Azerbaijan formed the E and SE limit of the survey area. The N and NE limits of the municipality are defined by the border with Dagestan located within the Kakheti Caucasus Range of the Caucasus Mountains. To the S and SW the survey area is delimited by the Alazani River, which is the most important watercourse in the region. It originates in the Greater Caucasus Mountains and flows NW to SE along almost the entire length of the Alazani plain (over 100 km).

The survey area covers a diverse range of environmental zones. The forested lower ranges and foothills of Kakheti Caucasus Mountains extend into the survey area, giving way, quite quickly, to the very gently sloping, and heavily cultivated, Alazani Plain. Numerous rivers, originating in the Kakheti Caucasus Range, flow from NE to SW to join the Alazani. These include, from east to west, the Shromishkhevi River, the Lagodekhiskhevi River, the Ninoskhevi River, the Baisubniskhevi River, the Kabali River, the Areshi and the Shorokhevi River. Alluvial fans have formed where these rivers exit the narrow mountain gorges. Furthermore, nearest to the Alazani River (on its left bank) there exists a ca 4-6 km wide belt of dense lowland forest.

The Alazani Plain has been heavily cultivated and irrigated through time. Traces of canal systems dating back to Antiquity have been a source of interest to geographers and archaeologists from the early 20th century (see A. Losaberidze, *Remains of Ancient Drains and Canals*, Tbilisi, 1938 and, more recently, K. Hopper et al., *Landscape Investigations in Georgia*, in Sauer et al. *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 & surveys of 2013-2016*, Forthcoming). Significant changes to the landscape can clearly be traced throughout the second half of the 20th century through comparison of historical and modern satellite images, though they likely already began before this. Like in many other regions of the Southern Caucasus, agricultural intensification throughout the Soviet period (especially collectivised agriculture, deep ploughing, and the construction of irrigation systems) has resulted in a very different landscape from that of the past (see K. Hopper et al., *Landscape Archaeology in Southern Caucasia: An Introduction*, in Anderson et al. (eds.) *Landscape Archaeology in Southern Caucasia: Finding Common Ground in Diverse Environments*, Vienna, 2018: 11-22; Lindsay et al. *Progress, problems, and possibilities of GIS in the South Caucasus: an international workshop summary*, *Antiquity* 92 (362) e9 2018). These factors have significantly affected our ability to read the archaeological record.

Methodology

In order to gain an understanding of the long-term land use history of the region, we employed a methodology that involved both extensive and intensive pedestrian survey.

The extensive survey was guided by published literature, local knowledge and the remote sensing of satellite imagery. Our goal was therefore to visit:

- All sites known from published sources. The descriptions of these sites often lacked detailed location data. Therefore, we aimed to locate as many of these sites as possible.

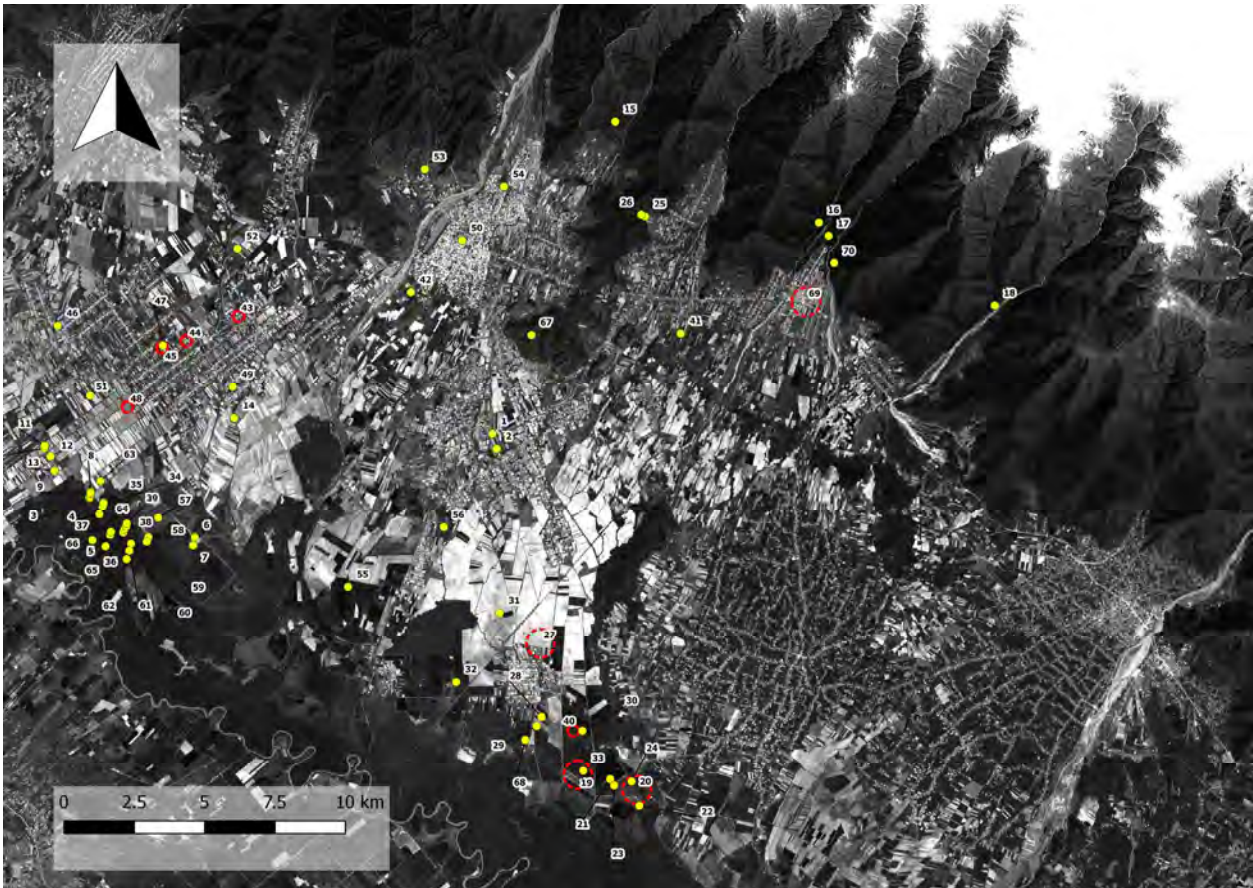


Fig. 15. General map of the sites located in the survey area. Several of the sites located by previous expeditions and described only in published literature could not be identified by our survey with high precision. These sites have been provided with a buffer to indicate the lack of precision in their boundary certainty. The buffers are indicated by red dashed lines. Base map Landsat 8 acquired 30 November 2015 (Image courtesy of the U.S. Geological Survey).

- Possible sites and features (areas of interest or AOIs) identified through the remote sensing of satellite imagery (modern high resolution imagery available on the Google Earth platform, and CORONA satellite imagery from the 1046 mission from the 18 Mar 1968), and Soviet period 1:25000 topographic maps drawn in the early 1960s and based on aerial photographs from 1954-1955.
- Sites and features described by local residents.

Every site/feature located was recorded and photographed and GPS points were taken (**Fig. 15**). If present, a representative sample of artefacts was also collected from each location.

We also undertook systematic pedestrian survey in the southeast region of the survey area, near the site chosen for excavation (Tsiteli Gorebi 5 = LS021). We planned the transects so as to intersect with, or pass near known or possible archaeological sites. As ground visibility was poor (see below), we also took the opportunity to undertake some transects in a set of ploughed fields (apparently a rarity this time of year). The transects were oriented N-S. In particular, we wished to see if there was any change in site type or artefact density as one moved across multiple environmental zones (e.g. from the plains toward the forested zone of the Alazani River). Transects

of between 500 m and 2.5 km in length and 100 to 200 m in width were surveyed systematically. Surveyors were spaced ca 10 m apart.

A new collection unit was defined every 50 m. Any artefacts found were collected and given a unique number corresponding to their collection unit. We also recorded the condition of the fields that fell into each 50 m collection unit. This included information on the type of vegetation (or crop if under cultivation), the stage of cultivation (if appropriate – i.e. harvested, ploughed), and the ground visibility expressed as a percentage (e.g. 30% of the ground surface is visible) (**Fig. 16**).

Finally, an intensive surface collection was undertaken at the site of Tsitei Gorebi 5 (LS021) (see **Fig. 4**, above). This was identified as a Chalcolithic site and chosen for excavation. Our goal was to record artefact distribution over the surface of the site and better define the site area. As such, a collection area was defined taking into account the area of low mounding and extending roughly 25 m beyond in all directions. The location of all artefacts within the area was recorded with a DGPS and their type was noted (e.g. pottery, lithics or daub fragment). Subsequently, all surface artefacts were collected within 10 x 10 m collection units that were laid out using a total station. The ground visibility of each collection unit was also recorded.

Results

The survey recorded 70 sites over the course of the season (**Fig. 17**). The sites varied in altitude from ca 200 to ca 700 m a.s.l. and ranged from Medieval churches to low mounded sites that likely represent prehistoric settlements. The majority of sites were located through the extensive survey and it is likely that small sites (e.g. low mounds and artefact scatters) are underrepresented.

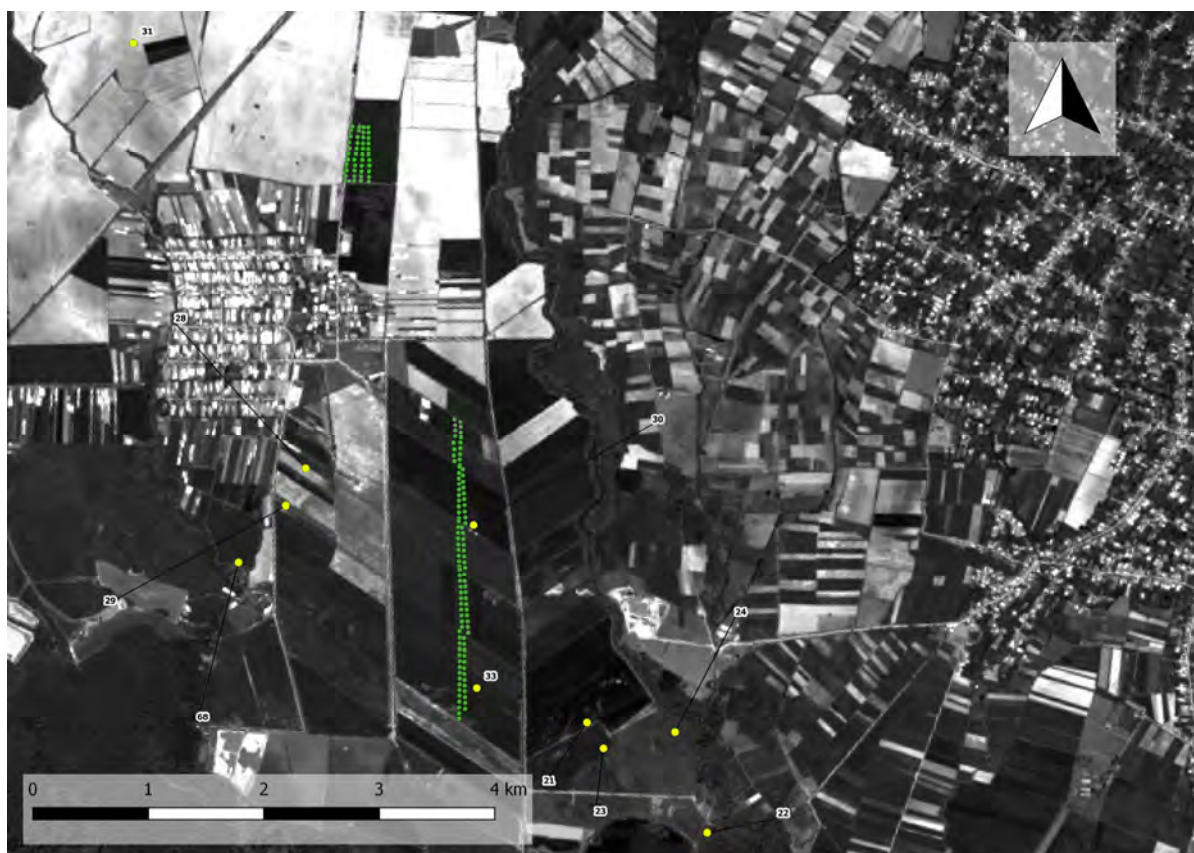


Fig. 16. Map showing the location of transects (green) and archaeological sites (yellow).

We had hoped that the systematic transect survey would help to address this issue. However, ground visibility was poor. Most of the fields in the survey area were still under crop, or had been recently harvested. The recently harvested fields (mostly wheat) often still contained a least 20 cm of ‘stubble’, and were partially overlain by hay. As such, even in recently harvested fields, the average visibility was less than 50% (an often less than 30%). These conditions are clearly reflected in the results of the systematic pedestrian survey in which very few surface artefacts were recorded. However, in several cases, and in particular where ground conditions were more favourable, we were able to locate low mounded sites and artefact scatters.

Some preliminary comments on site types and distributions can be made, though further analysis and research is required. Two low mounded sites, likely dating to the Chalcolithic period, were located in the SE corner of the survey area within 6 km of the Alazani River (LS021, LS033), as was another Chalcolithic site that while now ploughed out was likely originally mounded (LS028). Two further possible Chalcolithic sites known from previous excavations may also have existed at LS022 and LS040, but all traces of them are now gone due to agricultural activity. This was the area in which we undertook the most intensive survey and therefore it may not be surprising that the recovery of features of low topographic relief was more favourable. Despite this, it is possible that Chalcolithic settlement may have been focused on the Alazani River zone. Several palaeochannels of the Alazani River located ca 3-5 km north of its current course could have played a role in settlement location in this period. Intensive survey further to the west along the river zone, and extending north would be useful in clarifying this pattern.

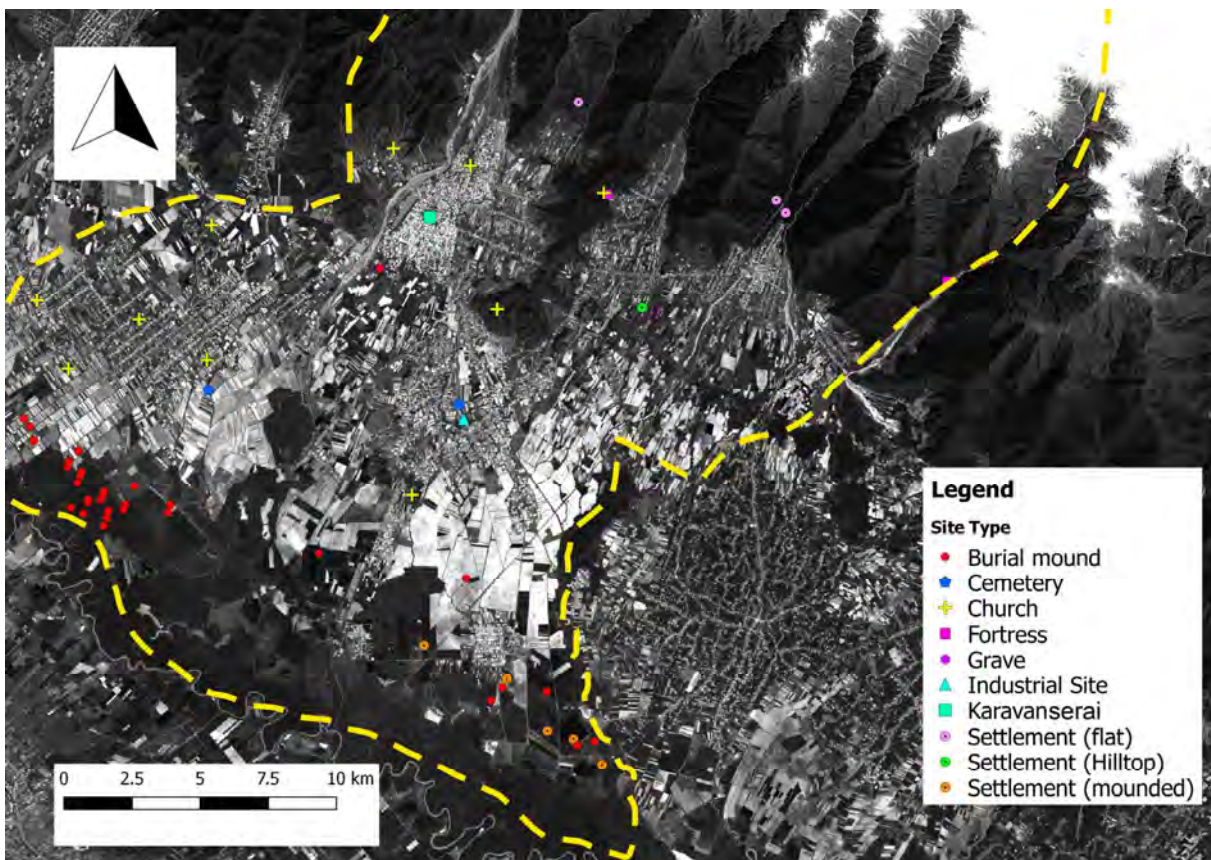


Fig. 17. Preliminary classification of sites by type. Base map Landsat 8 acquired 30 November 2015 (Image courtesy of the U.S. Geological Survey).

A number of kurgans and possible kurgans (burial mounds) were located within the survey area (**Table 1**). These kurgans, as in other parts of the regions, appear to date to the Bronze Age, and provide us with evidence of use of this landscape in this period. Several kurgans had been previously investigated (such as the excavated Ananauri 3 Kurgan) and their locations were previously known. Others were located through inspection of Soviet period 1:25 000 maps (drawn from aerial photographs from the 1950s) and the remote sensing of historical and modern satellite imagery. On imagery, kurgans on the cultivated plain either appear as small circular mounds or as areas of vegetation that have been avoided by ploughing. Several locations marked by roughly

Table 1. Kurgans and possible kurgans located within the survey area with an indication of their context.

Site no.	Name	Count	Location	Archaeologic al Certainty	Comments
LS003	Ananauri Kurgan 1	1	Plain north of the forest zone	High	Double mound?
LS004	Ananauri Kurgan 3	1	Forest	High	
LS005	Ananauri Kurgan 4	1	Forest	High	
LS006	Tchintchriani Gora Kurgan 2	1	Plain north of the forest zone	High	
LS007	Tchintchriani's Gora Kurgan 1	1	Plain north of the forest zone	High	
LS008	Ananauri Kurgan 2	1	Plain north of the forest zone	High	
LS009	Ananauri Kurgan 5	1	Plain north of the forest zone	Medium	
LS010	Ananauri Kurgan 6 (Gorebi)	3?	Plain north of the forest zone	High	
LS012	Ananauri kurgan 7 (Gorebi) ?	1	Plain north of the forest zone	High	
LS013	Ananauri kurgan 8 (Gorebi) ?	2?	Plain north of the forest zone	Medium	
LS023	Unknown	1	Plain north of the forest zone	Medium	
LS024	Unknown	1	Plain north of the forest zone	Medium	
LS029	Unknown	1	Plain north of the forest zone	Medium	
LS030	Tsitelgorebi Kurgans	6 (or7?)	Plain north of the forest zone	High	
LS031	Unknown	2?	Plain north of the forest zone	Low	
LS032	Unknown	2?	Plain north of the forest zone	Low	
LS034	Ananauri Kurgan 9	1	Forest	High	
LS035	Ananauri Kurgan 10	1	Forest	High	
LS036	Ananauri Kurgan 11	1	Forest	High	
LS037	Ananauri Kurgan 12	1	Forest	High	
LS038	Ananauri Kurgan 13	1	Forest	High	
LS039	Ananauri Kurgan 14	1	Forest	High	
LS042	Kabli's Kurgan	1	Plain extending off foothills	High	
LS058	Ananauri Kurgan 15	1	Forest	High	
LS059	Ananauri Kurgan 16	1	Forest	High	
LS060	Ananauri Kurgan 17	1	Forest	High	
LS061	Ananauri Kurgan 18	1	Forest	High	
LS062	Ananauri Kurgan 19	1	Forest	High	
LS063	Unknown	2?	Plain north of the forest zone	Low	
LS064	Ananauri Kurgan 20	1	Forest	High	
LS065	Ananauri Kurgan 21	1	Forest	High	
LS067	Ananauri Kurgan 22	1	Forest	High	

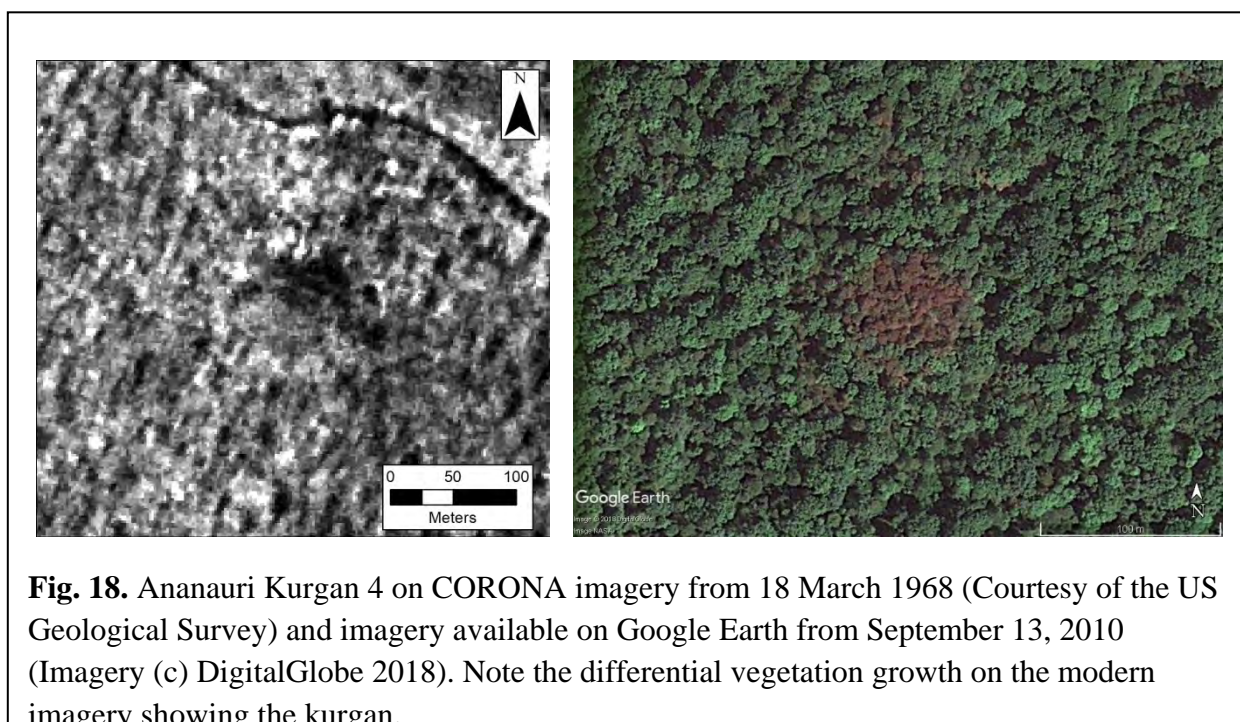
circular soil discolourations were also located, though it was often difficult to verify if these represented kurgans than had been ploughed out. Kurgans located in forested areas were visible on the modern high resolution imagery because of visible differences in vegetation growth on top of the kurgan. Likely due to their height (c. 1 – 15 m above the surrounding ground level) and the amount of moisture the soil retains, at certain times of year the vegetation growing on top of the kurgans appears brown instead of green (see. **Fig. 18**).

The majority of the kurgans were found within c. 7 km of the Alazani River; one concentration is located within the forested zone in the northwest part of the survey area, while another group is found in the southeast corner of the survey area near to LS021. A very few examples were found in isolation, such as the well preserved kurgan located just south of the village of Kabali, c. 500 m east of the Kabalitskevi River (and over 15 km NE of the Alazani River). This may suggest that the distribution of such features may have extended farther north in certain locations (e.g. along important NE-SW running valleys that lead into the mountains). The lack of information on settlements of this period does suggest that further investigation of upland zones will be crucial.

The kurgans located in or near the forested area in the northwest of the survey area are the best preserved. The forest has clearly aided in the survival of some of these kurgans, as those located within the agricultural fields immediately north of the forest showed clear signs of plough damage (or have been almost ploughed out entirely). Based on a comparison of the CORONA imagery and modern high resolution imagery, the northern extent of the forested area has increased over the last 50 years. In 1968, one kurgan (LS060) was located inside a cultivated field, while LS036, LS037, and LS038 are at the edges of the same field, and not within the forest (as they are today). However, it seems likely that this zone was not (if at all) heavily forested in the period(s) contemporary with the construction of the kurgans; their relationship with the Alazani River is also unknown.

A total of 16 kurgans were identified in the forested area. Most range between 35 and 70 m diameter and between 1 and 8 m high. However, one kurgan (LS065) is impressively large (c. 90 m in diameter and 15 m high), making it stand out from the many other kurgans in the same forest. Only one other kurgan reaches the same diameter (LS062) but it is only 9 m high. LS034 is also considerably larger than average, at 70 m in diameter and 9 m high.

We were also able to relocate a group of kurgans (LS030) on the plain in the southeastern



part of the survey area that we believe corresponds to the so-called Tsiteligorebi (or Ulianovka) Kurgans excavated in the 1970s by R. Abramishvili (R. Abramishvili, M. Abramishvili, Late Bronze Age Burrows at Tsitelgori, in A. Sagona, M. Abramishvili (eds.), *Archaeology in Southern Caucasus: Perspectives from Georgia* [Ancient Near Eastern Studies Supplement 19], Leuven, Paris, Dudley, MA 2008: Peeters, 351-364). While the group was said to be composed of over 20 kurgans, only six or possibly seven were clearly visible on the ground. However, upwards of 20 areas of soil discolourations are visible on the modern imagery available on Google Earth platform. These discolourations may be all that is left of several ploughed out kurgans.

We also revisited locations where cemeteries dated to the Hellenistic period were previously recorded. However, little can be said about settlement or other land use practices during this period based on this evidence. One Late Antique (4th-6th century AD) cemetery was said to have been located at the village of Baghdadi. We visited the location of the cemetery (now under a modern road and houses) and noted a number of cist grave covers on the roadside and reused as makeshift bridges to span drainage ditches and on the roadside. However, little else is currently known about this period.

A number of Mediaeval Churches were also recorded. Most were suggested to date to the High Medieval period or later. Furthermore, several known Medieval settlements, churches and refuges were visited in the foothills. Of particular interest was a Karvasla (Karavanserai) that was recorded in the village of Kabali. The site was known to the local museum and residents and is located on private land. This speaks to important trade routes within the region in the Middle Ages that deserves fuller consideration.

Results of Intensive Surface Collection at Tsiteli Gorebi 5 (LS021)

As a result of the intensive surface collection at the site LS021, a total of 539 artefacts were recovered inside the collection grid: pottery is by far the most common artefact type recovered (268 fragments) (see **Fig. 4**, above). Lithics were the second most common (mainly obsidian and flint, 210 fragments), while a type of building material, likely daub, is only represented by 61 fragments. Some preliminary observations on the distribution of artefacts can be highlighted. It is perhaps unsurprising that visibility played a major role in the recovery of artefacts (see above). The areas that had been cleared more intensively are where the majority of the artefacts came from. In general the density of artefacts is greater on the mounded parts of the site. However, some concentrations of artefacts were also located in areas where the visibility was poor. Pottery was found distributed across the surface of the mound, and appeared to diminish in number rapidly away from the mounded area. Lithics on the other hand, while being found across the mounded area, were also found in small concentrations particularly to the NW and SE of the mounds. Daub fragments are mainly concentrated on the top of the mound, together with pottery fragments, but minor concentrations are also noted to the W and to the SE, in the latter case associated with stone artefacts.

Visibility was very poor to the south of the modern drainage ditch that cuts through the site, but concentrations of pottery and obsidian plus some sporadic fragments of daub were recovered, suggesting the site extended further to the south than was clear from the visible low mounding.

Aerial Photogrammetry

Aerial photogrammetry was also undertaken at three sites (LS021, LS030, LS033) by Giorgi Kikitadze. The photographs will be processed following the season and Digital Elevation Models (DEM) will be created.

Future Work

The recommendation would be to return for a subsequent season after fields have been ploughed in either October or April. Furthermore, it may be prudent to implement a type of ‘mole-hill’ survey, which involves small shovel-test pits to look for sub-surface artefacts.

Preliminary Report on Geoarchaeological Research (Giovani Boschian)

Tsiteli Gorebi 5. Preliminary geoarchaeological notes

The geological and geoarchaeological sequence of the Tsiteli Gorebi 5 site is located in the alluvial plain of the Alazani river and of its tributary Kviriatskhali, which flows few hundred metres to the east of the site. The area is subhorizontal for some kilometres around the site, with minor undulations that are unlikely to be the result of past river processes, because of the typical meander-like fluvial régime of the rivers. Conversely, extensive land modifications carried out in the last 80 years for crop agriculture improvement erased part of the original geomorphological imprint of the rivers on the landscape.

The sediments observed in the surroundings of the site, in archaeological soundings or along deep field drainage channels, are mainly silts, silty loams and clay loams, with occasional sand intercalations. The soils observed are mostly recent Entisols developed at the surface of the aforementioned sediments, and are largely disturbed by modern ploughing. The water table is shallow, deriving from river losses and from inputs provided by the rich water table of the alluvial fans that border the Caucasus fringe. Oscillations of the water table are originating redoximorphic features in the sediments below 1.0-1.5 m.

The sequence better showing the general stratigraphy of the site was found in Sounding 1 (**Fig. 19**). The following layers were observed from top downwards.

1. Brown-dark greyish silty loam or silty clay loam, with well developed medium to coarse granular aggregation; no skeleton. Abrupt, horizontal and locally undulating limit; thickness 0-33 cm. The hue is lighter and the aggregation is somewhat poorly developed in the lower 15 cm (1.1) of this unit.

2. Brownish clay loam or silty clay loam, rather compact (mostly when dry), moderately developed fine to medium granular aggregation. No skeleton. Very common dark and light mottles, vertically elongated and subcircular in the horizontal plane, produced by earthworm activity throughout the unit. Clear subhorizontal limit. Thickness 33-60 cm.

3. Light brown loam (lighter at the base), homogeneous, soft, massive or with rare areas of medium developed fine to medium granular aggregation in earthworm burrows. No skeleton. Abrupt, subhorizontal and plane limit. Thickness 60-138 cm.

4. Thin discontinuous level (0-4 cm) of disconnected whitish clay clods, locally eroded. Marks the limit between 3 and 5.

5. Greyish brown or seldom greenish (darker at top) sandy loam-very fine loamy sand, soft, no sedimentary structures, massive. No skeleton. Common oxidised redoximorphic features

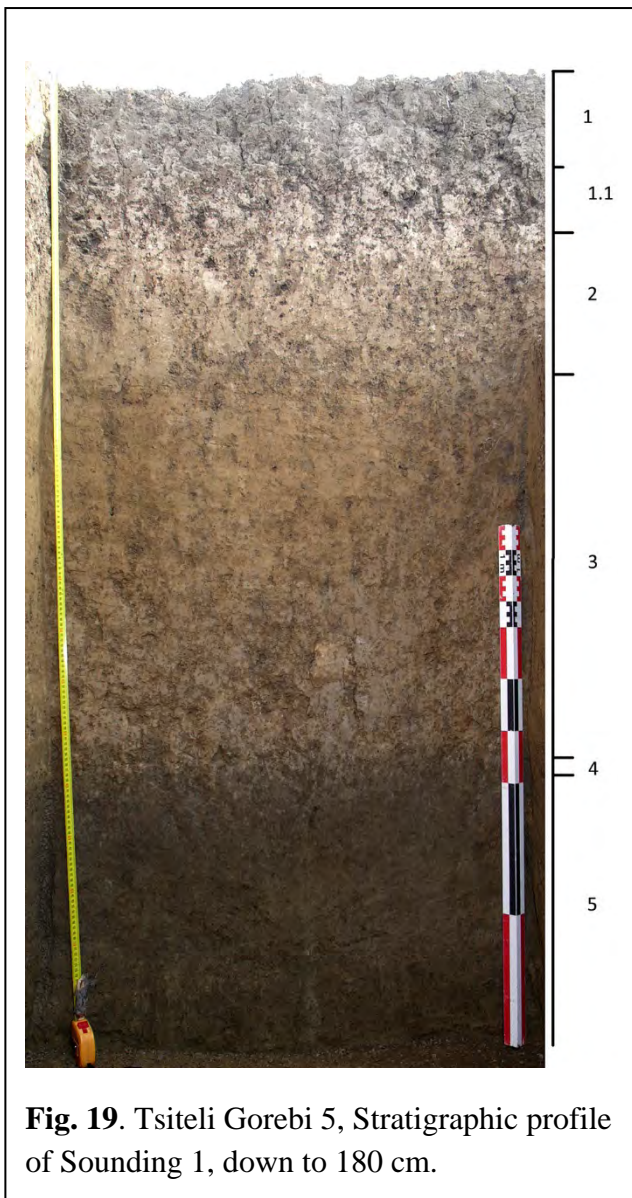


Fig. 19. Tsiteli Gorebi 5, Stratigraphic profile of Sounding 1, down to 180 cm.

(brownish Fe-oxide mottles). Sharp subhorizontal limit. Thickness 140-260 cm.

6. Dark grey fine to medium sand, with whitish granules. Very homogeneous, soft and without sedimentary structures. Limit unobserved. Thickness 260-285+.

Observations carried out along the channel situated few metres south of the site put into evidence a sequence that resembles the aforementioned one, but also presents remarkable differences. The top unit is a dark grey-blackish soil A horizon, whose top 25 cm are disturbed by ploughing. This horizon grades downwards into a C horizon resembling unit 3 but with a slightly higher chroma, including more frequent redoximorphic features and common very altered whitish CaCO₃ mottles. It must be pointed out that the oscillations of the water table affect more strongly this sequence, as its top level is about 1 m lower than the top of the mound. It can be hypothesised that unit 2 of sondage 1 represents an anthropic unit deriving from still unspecified human activities. However, the about 30 cm of this unit do not fully account for the difference in height between the mound and the surrounding plain. More soundings and sequence observations will be necessary in order to better understand the site formation processes and their relationships with the surrounding river system.

Geomorphology of the Lagodekhi area (Fig. 20)

The geomorphological study of the survey area was carried out mostly on cartography and satellite images, with some terrain check. The cartography employed is in fact the DTM derived from 1 arcsec SRTM data (freely available through the US Geological Survey) and the 10, 20 and 60 m resolution multispectral Sentinel 2A images provided by the European Space agency (images 09.10.2017; 19.10.2017; 13.12.2017; 02.01.2018). The data used were True Colour images, false colour images (bands 12, 11, 8) and NDVI data (bands 3 and 8A). Rather unsurprisingly the October and December images provided higher quality data, as ploughing is carried out mostly in that period in the Lagodekhi area. Terrain checks were carried out during the archaeological survey, mostly caring about the morphological and chromatic elements observed in the cartography. It resulted from field checks that forest areas were mapped as land surface in the SRTM data.

At small scale, the area is characterised by three physiographic elements: the Caucasus fringe reliefs, the Alazani alluvial plain, and the large alluvial fans deposited by the left-side tributaries of the Alazani, which accumulate coarse (and energy-sorted) sediments eroded from the Caucasus reliefs. The Caucasus reliefs were not included within the geomorphological survey, because the archaeological research in the area was concentrated in the territory comprised between the Kviriatshkhal to the east, the Alazani to the south, the western parallel delimiting the Lagodekhi alluvial fan to the west and the Lagodekhi town to the north.

The alluvial fans extend for more than 10 km from the valley mouths into the alluvial plain. They were largely stabilised in USSR times, and only occasionally coarse sediments overflow the river beds. Apparently, no prehistoric archaeological sites were observed on the fans, suggesting that they formed in relatively recent times. The alluvial plain is subhorizontal and very wide, suggesting that it formed during a phase of overdeposition controlled by tectonic and eustatic vertical movements. The present-day river beds follow a meander-like path, in accordance with the very gentle dip of the alluvial plain. Several abandoned meanders and longer meandering beds can be observed along the Alazani course.

Abandoned river beds of different types can be observed in the Sentinel 2A images.

- large beds (about 100 m-wide) characterised by dark fine sediment embedding cm-size gravel organised in river bars that can still be observed in the field as topographic highs. These palaeo-beds suggest a braided stream régime, and occur mostly at the extreme fringe of the alluvial fans, indicating a relatively high energy transport.
- large (50-100 m-wide) meandering palaeo-channels, mostly located in the vicinity of the present-day meandering rivers, characterised in the Sentinel images by dark grey to light grey/brown colour.
- narrow palaeo-streams, of dark colour, often with wavy course.

- old agricultural ditches, characterised by dark colour and straight course, generally parallel to present-day ditches.

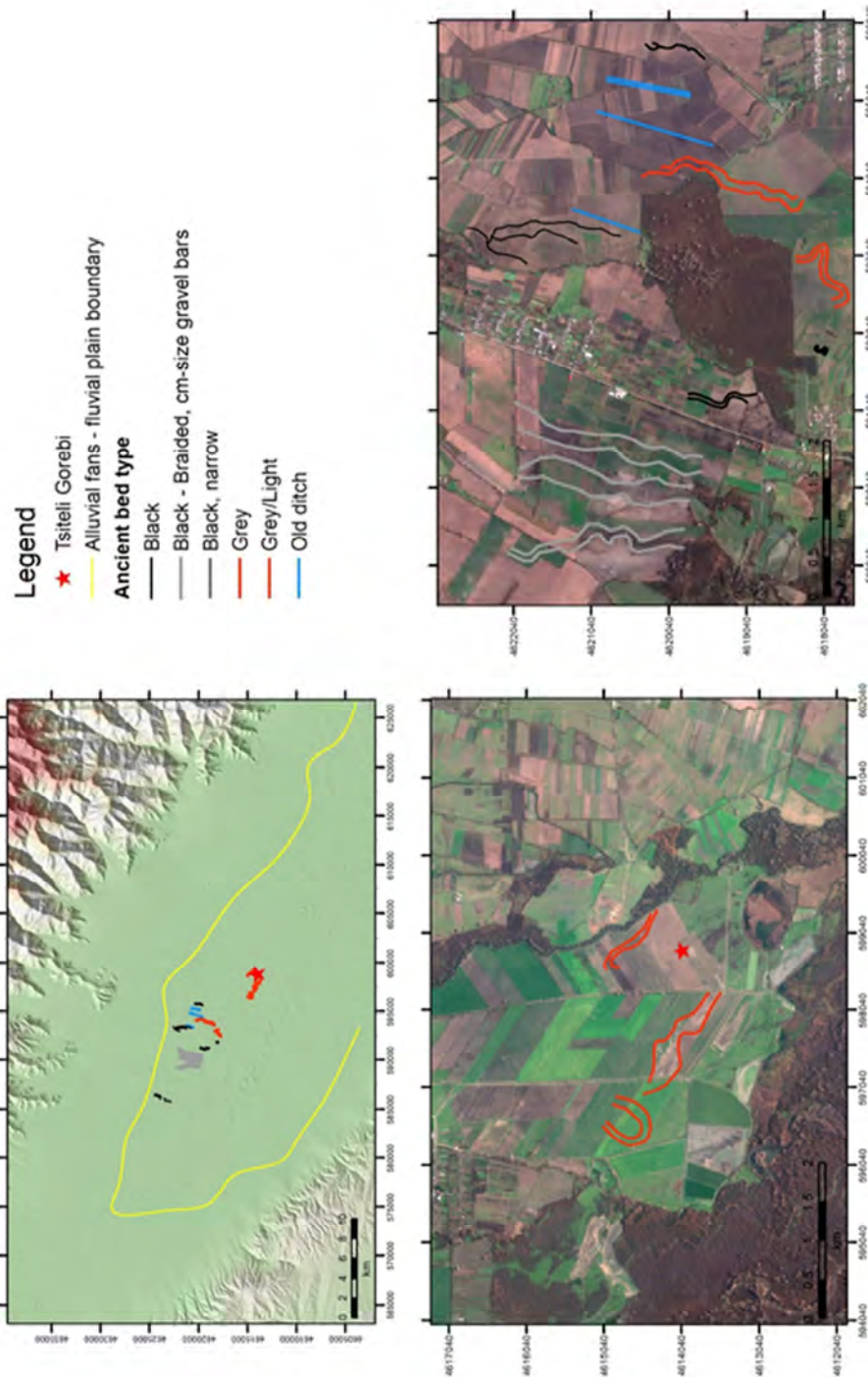


Fig. 20. Geomorphology of the Lagodekhi area.

Sampling for palaeoenvironmental research, archaeometric analyses, radiometric dating

Sampling for different types of scientific analyses was also carried out in the course of the season, in order to implement the corpus of data collected during the previous years in the Shida Kartli region with the aim of investigating the relation of the ancient inhabitants of Georgia with their natural environment and their use of available natural resources.

Ca 25 samples of Late Chalcolithic sherds from Tsiteli Gorebi 5, together with a few Late Bronze, Hellenistic and Medieval sherds, were selected for archaeometric analyses. 30 obsidian samples were collected for provenance analysis (to be carried out by Bernard Gratuze, IRAMAT, Institut de Recherche sur les Archéomatériaux, Centre Ernest Babelon, C.N.R.S., Université d'Orléans, France).

We also collected samples for soil micromorphological analysis (to be analysed by Giovanni Boschian) and palinological analyses (to be processed by Eliso Kvavadze, Georgian National Museum) from the sections of the Soundings. Unfortunately, remains of organic materials were extremely scanty, so that very few ^{14}C samples (to be analysed by Elisabetta Boaretto, Weizmann Institute of Science, Rehovot, Israel), mainly consisting of animal bones, could be collected from the site. Sample of animal bones were also collected with the aim of subjecting them to stable isotopes analysis (by prof. Paola Iacumin, University of Parma, Italy) in order to trace movements of people and animals, as well as herding systems in the Chalcolithic periods, and to DNA analyses (by profs. Ino Čurik and Vlatka Čubrić Čurik of the Agronomski Fakultet of Zagreb University, Croatia) in order to reconstruct the diffusion of domestic animal races.

Results and Future Perspectives

The first season of the "Georgian-Italian Lagodekhi Archaeological Project" confirmed the interest of the Lagodekhi region for a long-term project of archaeological investigation. Test excavations at the site of Tsiteli Gorebi 5 showed the possible presence, for the first time in the region, of large architectural structures of the Chalcolithic period, which we intend to investigate, during the next years, by extensive horizontal exposure. At the same time, they provided a possible explanation for the poor preservation of the contemporary archaeological levels highlighted by all previous excavators, and clarified the general geomorphological history of the surrounding plain. Unfortunately, due to the bad weather conditions it was not possible to reach the base of the walls discovered in Soundings 2 and 3, and to ascertain whether a floor level was associated with them, and whether they were built directly on the natural soil or over earlier occupational layers. This will remain a task for the future seasons. Soundings 1-3 also yielded a an interesting assemblage of ceramics, lithics and worked bone material, which integrates the until now scanty corpus of published artefacts of the Chalcolithic period of Eastern Georgia.

On the other hand, the dearth of reliable primary contexts of recovery and of organic material to be subjected to ^{14}C analyses, and the homogeneity of the ceramic assemblage leave some important chronological question unanswered, e.g. that of the length and absolute dates of the period and of the existence of recognisable sub-phases within it. The lack of any recognisable influence of the "Chaff-faced Ware" horizon in the Tsiteli Gorebi 5 ceramic assemblage suggests a date earlier than expected, but further evidence is needed before any firm conclusion can be drawn on the topic. To solve these questions will be one of the aims of the next excavation seasons. Another task for the future seasons will be to investigate other contemporary sites in the surroundings of Tsiteli Gorebi 5, in order to get an idea of their mutual relations.

The archaeological survey of the Lagodekhi municipality resulted in recording the locations of 70 archaeological sites of different periods, some of which were discovered thanks to remote sensing techniques and documented for the first time, although a large part of them were already known and/or excavated. Of special interest is the concentration of large kurgans, most of which

presumably belonging to the later 3rd millennium BC Early Kurgan cultures, at the northern border of the forest flanking the Alazani river in the Chabukhiani/Ananauri area. About 20 of them have been mapped up till now, and their general distribution undoubtedly worth further analysis.

Significant difficulties to the reconstruction of the ancient anthropic landscape were posed by low visibility caused by the heavy summer vegetation cover and by the severe alteration of the rural landscape which characterised the 20th century A.D. From a methodological point of view, an important achievement of the survey can be considered the development of a fine-tuned strategy for carrying out future surveys in such difficult and challenging conditions. We plan to carry out future survey seasons in October/November or April, when visibility conditions are supposed to be optimal.

Other factors which apparently had a deep impact on the visibility of archaeological sites are the complex sedimentary history of the Alazani plain, which geo-morphological research is just starting to unravel, and agricultural intensification throughout the Soviet period. A precise strategy for quantifying the bias caused by these elements and include them into the evaluation of ancient settlement patterns will have to be developed during the following seasons.

To sum up, besides setting the foundation for future larger scale excavations at the Chalcolithic site of Tsiteli Gorebi 5, the expedition collected a large number of data, whose future analysis in a multidisciplinary perspective will set the conditions for a better understanding of the natural environment of the Lagodekhi region, which appears to have been rather dynamic and clearly underwent significant changes in the course of the last millennia, and of its long-term impact on human settlement and economy.

Acknowledgements

Thanks are due to the National Agency For Cultural Heritage Preservation of Georgia for granting us the permission to undertake archaeological investigations at Tsiteli Gorebi 5; to the Municipality of Lagodekhi for inviting us to work in the region and for facilitating our work in many ways, in particular by allowing us to use an old UAZ car for carrying out the regional survey. We would also like to thank Mindia Jalabadze and Giorgi Gogochuri for providing us with some difficult to access Georgian literature about Chalcolithic excavations in Georgia.



Members of the 2018 "Georgian-Italian Lagodekhi Archaeological expedition".