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THE ZAKYNTHOS ARCHAEOLOGY PROJECT*

Preliminary report on the 2008 season

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Within the framework of the Zakynthos Archaeology Project, the fieldwork of 2008 was carried out in three campaigns: one week from 14-18 April, four weeks from 16 June-12 July and again one week from 13-18 October. The shorter campaigns in April and October were limited in scope and served to study finds in our base at the Venetian Kastro in Zakynthos town. In addition, pre- and revisits of tracts were done in these weeks in order to investigate seasonal influences on the survey results.[1]

Most of the actual survey work was done during the summer campaign, when two teams conducted the intensive archaeological survey. As in 2007, research in 2008 concentrated on area B in the center of the island, surrounding the villages of Machairado and Mouzaki (fig. 1). Area B is the largest of our three research areas and represents a full transition in the landscape from the mountains to the alluvial plain, including the slopes, the foothills and the transitional zone between the foothills and the plain.[2] In 2007, the mountainous part in the east of the research area, as well as a part of the alluvial plain in the extreme west had been covered by intensive archaeological survey. The aim for 2008 was to connect both areas already covered, thus creating a continuous survey transect stretching from the mountains into the alluvial plain. In addition, archaeological survey and geomorphological research was carried out in two separate parts of the research area. In the north, we surveyed the fields surrounding the church of Ayios Dhimitrios at

* The Editorial Board of *Pharos* regrets that some information contained in the illustrations is lost, because it was impossible to print them in colour. The full article with the original colour illustrations can be viewed on the site of the Netherlands Institute at Athens: www.nia.gr/pharos16.html.

1 For a description of the project in general and preliminary reports on previous campaigns, see: Van Wijngaarden *et al.* 2005; 2006; 2007. See Van Wijngaarden *et al.* 2007, 47-49 for a detailed account of the pre- and revisit program.

2 For the geology of the island, see: Sorel 1993.

Melinado, where marble columns and various marble blocks perhaps indicate the presence nearby of an ancient monumental structure.[3] In the south-east, special attention was given to Mouzaki Brouma, where a significant concentration of lithic artifacts had been discovered and briefly investigated during the pilot survey of 2005.[4] In 2008, a total of 1,297 tracts were covered by field walking, resulting in the collection of some 21,000 finds, mostly ceramics and lithics.

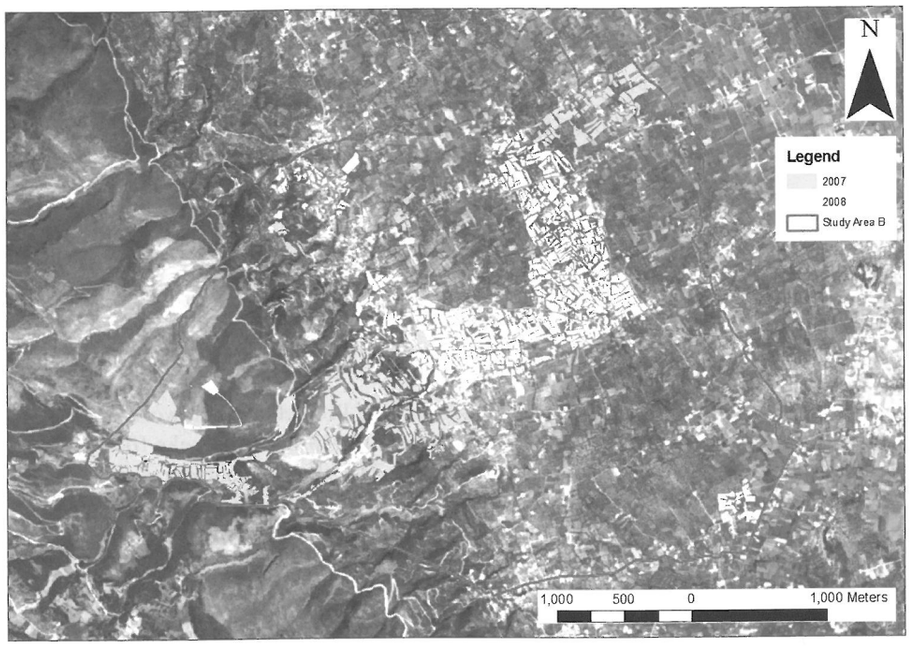

Figure 1. *Research area B and the fields investigated in 2007 and 2008*

Find distributions in the surveyed areas were generally thin, with several notable concentrations (fig. 2). The extents of the find concentrations, however, are hard to identify and, mostly, do not consist of material that is chronologically homogeneous. In addition, all the material is very fragmented and heavily worn, indicating that the distribution of archaeological materials in this landscape has been seriously affected by agricultural activities. Currently, the transitional zone between the foothills and the plain is mostly used for the cultivation of olives and currant vines, for which regular ploughing is carried out. As before, lithics constituted a very high proportion of the total of collected finds in all parts of the research area. Of the total number of finds collected 14% are lithics, while in 41% of all tracts lithics have been collected. Several of the concentrations indicated in fig. 2, in fact, consist of large numbers of lithic finds, indicating that there may be other concentra-

3 Kalligas 1993, 62.
4 Van Wijngaarden 2005, 68-69.

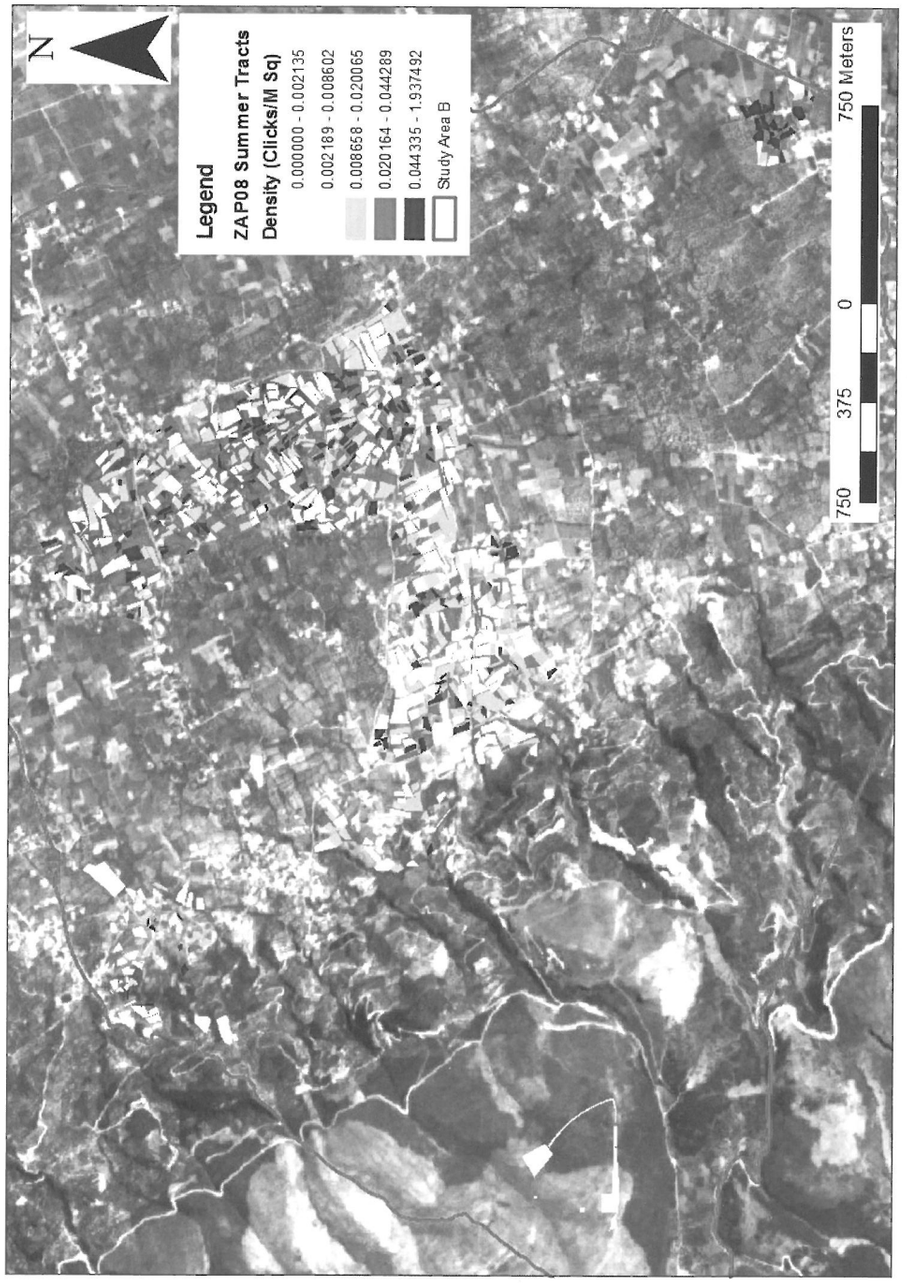

Figure 2. *Absolute and uncorrected find densities in the 2008 tracts*

tions comparable to Mouzaki Brouma (see below), which has tentatively been assigned to the Middle Palaeolithic period.

With regard to the pottery that was collected, clear concentrations of ancient material are, as yet, difficult to identify. Small quantities of ancient pottery occurred in many tracts all over the research area. In Mouzaki Brouma in the southeast of the research area, a significant proportion of Hellenistic-Roman pottery came to light among the large number of lithic artifacts. Another concentration of finds from the same period was attested in a very overgrown field in the foothills at Lagopodo, directly south of the monastery of Eleftheotria (tract 3612). The pottery was generally of larger size and more diagnostic than usual (fig. 3). A revisit to this field in October, when the vegetation had gone, confirmed the presence of relatively large quantities of pottery. It also became clear that some prehistoric pottery and lithics were present at this location. Surrounding fields also yielded somewhat higher proportions of ancient material. Considering the location of this concentration at the foot of the steep mountain slopes and just above the gently sloping transitional zone, we think that this Hellenistic-Roman site represents an ancient farmstead.

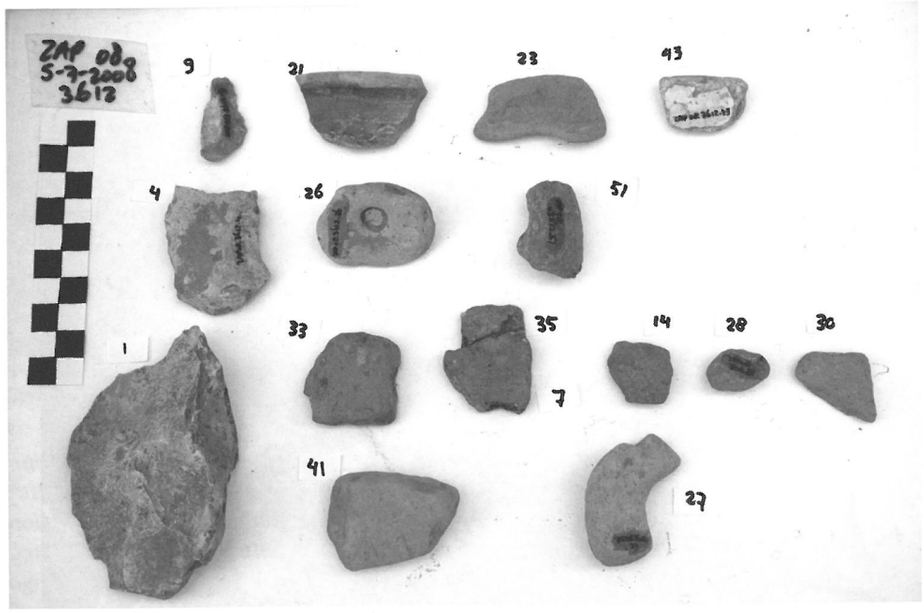

Figure 3. *Some "high quality finds" (Zakynthos standards) from tract 3612*

Analysis of historical aerial photographs

During the October revisit to the concentration of finds in tract 3612, we took the opportunity to study in more detail the landscape surrounding this tract. In particular, we used historical aerial photographical imagery in which contrasts had been modified. A 1960

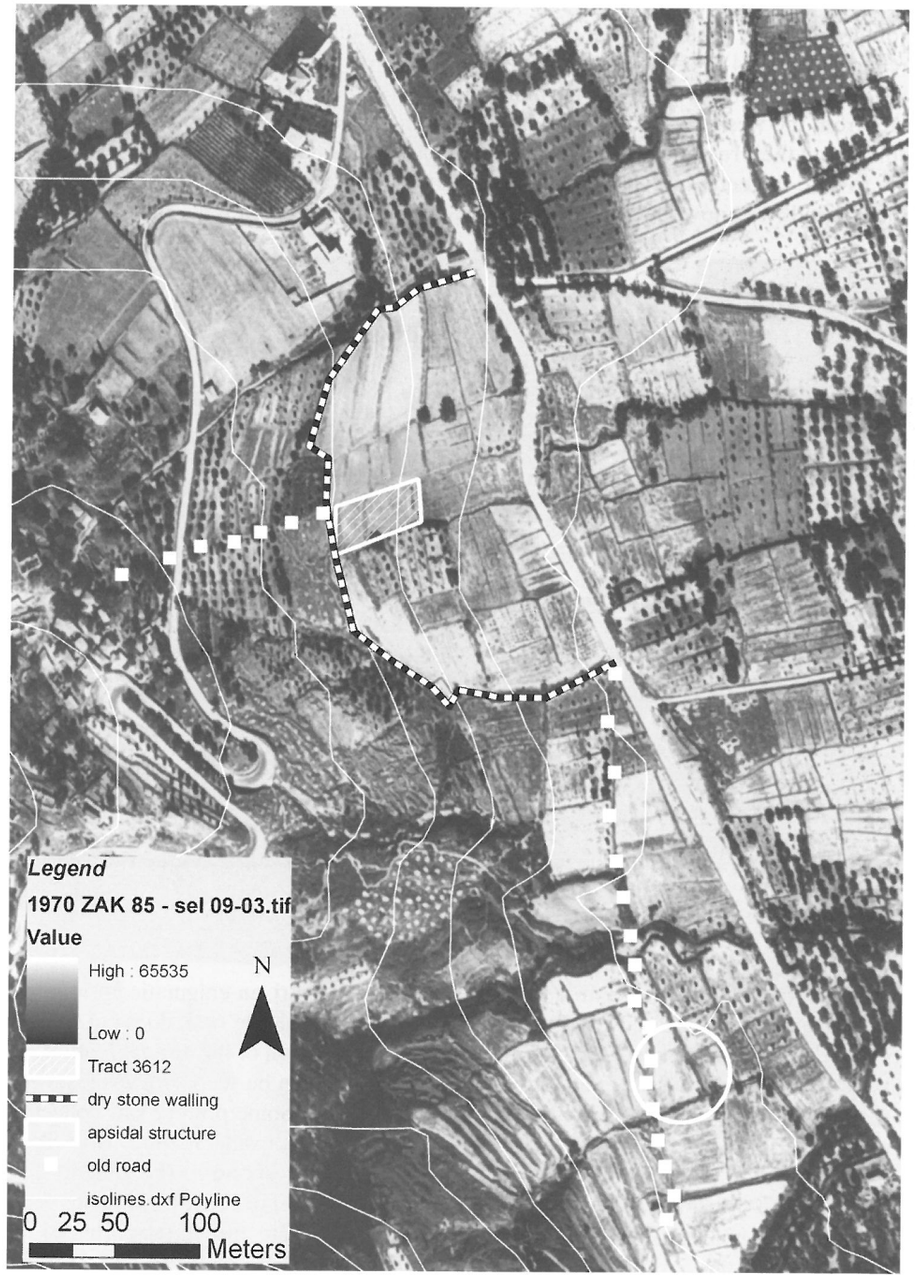

Figure 4. *Tract 3612 projected in a 1970 aerial photograph, indicating the semi-circular line of dry stone walling and approach from the west*

photograph showed that our concentration of finds was in the middle of a somewhat semi-circular area (fig. 4). Following the line of the semi-circle, we discovered various parts of good, dry stone walling that once may have been part of an enclosure (fig. 5). An entrance route from the west was also localized. It is difficult to interpret the significance of these findings and their relation to our concentration of Hellenistic-Roman pottery. It is impossible to date the enclosure: it may belong to Late Medieval or (Early) modern times, for which periods we know that there were several estates on Zakynthos.[5]

Figure 5. *Part of the enclosure of dry stone walling*

Somewhat to the south of this area, near the village of Romiri, an enigmatic apsidal feature, 38 m in length, was discovered on a 1934 aerial photograph (fig. 6). It does not show in any of the later photographs. Currently, the fields at the location of the apsidal feature are heavily overgrown with bushes and grasses and very little can be seen. However, several large, irregularly cut blocks were attested in a ditch (fig. 7). Some pottery was collected, none of which was ancient. It is as yet difficult to interpret our apsidal feature. Most likely it is related to an adjacent linear feature that does not correspond to the general field orientations. This linear feature seems to represent an old road or track which leads to an old well to the south and beyond. To the north this linear feature ends at the corner of the semi-circular dry stone walling in which tract 3612 is located.

5 See, for example, Konomos 1979; Zivas 2002, 69-90.

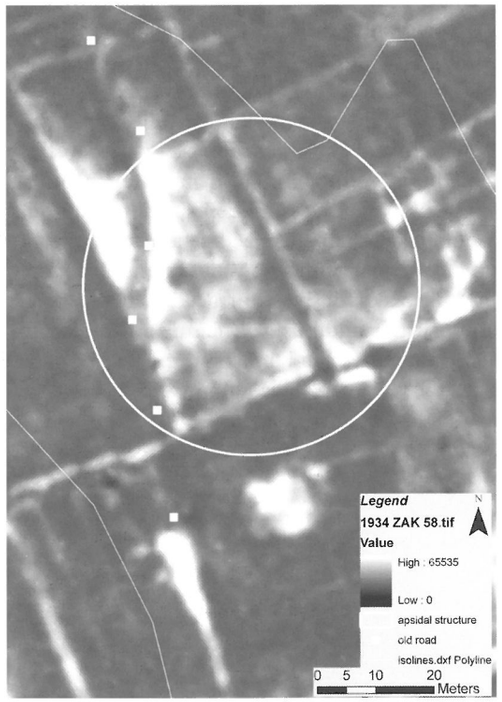

Figure 6. *An enigmatic apsidal feature on a 1934 aerial photograph (see also fig. 4)*

Figure 7. *A worked block in the area of the apsidal feature (tract 9005)*

Palaiokastro

One of the conclusions of the 2007 campaign had been that the hill of Palaiokastro constituted an important archaeological site.[6] The Medieval structures on the hilltop had been investigated previously,[7] but our survey revealed remains of earlier periods as well. In geological terms, Palaiokastro is situated in the transitional zone from the Vrachionas ridge to the Alikanas alluvial plain. The whole area has three prominent summits: Kakoligani in the west, the prominent top of Palaiokastro itself and the lower plateau below Palaiokastro to the east (fig. 8). The hill of Kakoligani is nowadays densely covered with young forest, but before the 1990's this hill was extensively terraced and cultivated.[8] The rest of Palaiokastro is mostly covered by shrubs and bushes (maquis), while on the eastern slopes abandoned terraces overgrown with grass can be recognized.

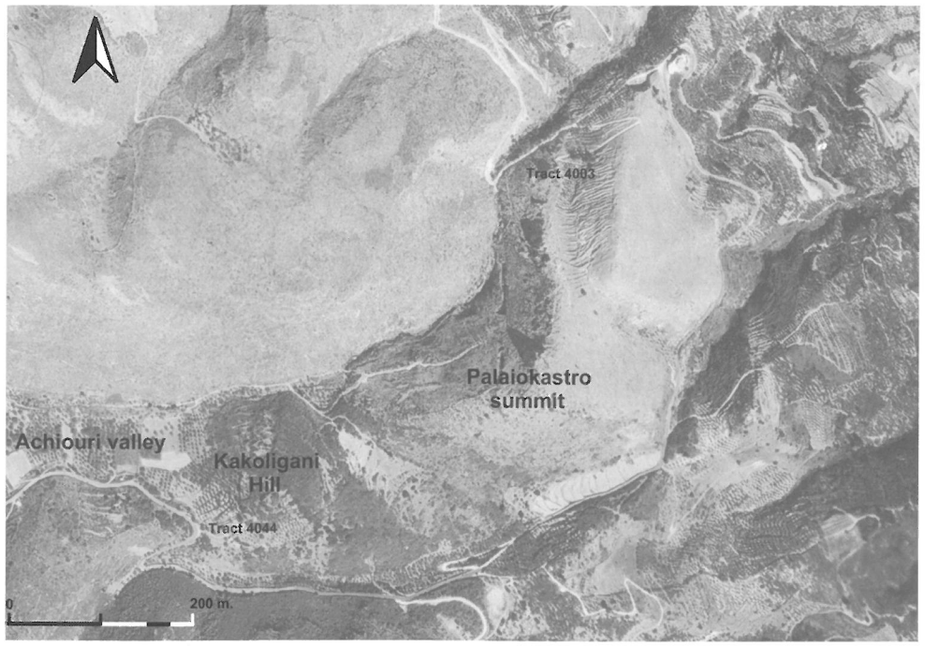

Figure 8. *Palaiokastro on a vertical aerial photograph (1993)*

6 Van Wijngaarden *et al.* 2007, 49-52.
7 Mylonas 1991, 174-175.
8 A 1970 aerial photograph shows the agricultural terraces at this hill in use, but on a 1993 photograph they are abandoned.

The geo-archaeological study of Palaiokastro hill that was conducted in 2008 included mapping of soil erosion/deposition with the help of two standard models, the Revised Universal Erosion Model (RUSLE) and the Units Stream Power-based Erosion/Deposition model (USPED). The data for these models were provided by fieldwork including coring and sampling from exposed sections. The laboratory techniques applied included grain size analysis and thermogravimetric analysis. Both models show extensive erosion, especially in the eastern part of the study area where the thin fragile soils are eroding and at some places already expose the underlying parent material. Archaeological artifacts in such areas tend to be chronologically mixed.[9] This fact perhaps helps to explain the heterogeneous nature of the pottery discovered at Palaiokastro during 2007. Even though very few diagnostic sherds were found that could provide a clear chronology of the site's occupation, preliminary study of ceramic fabrics indicates at least 16 different fabric groups belonging to different periods.

Two buried soil horizons have been identified at Palaiokastro, which can be related to periods of soil stability in the past. In a coring at tract 4044 (fig. 8), on the saddle above Achiouri valley, at a depth of ca. 60 cm, mud-brick was attested with a thickness of more than 10 cm. Small pieces of pottery were associated with the mud-brick, which have tentatively been assigned to historical periods (Hellenistic?) on the basis of their fabric. These artifacts were discovered in a dark brown colluvial soil related to the construction of some agricultural terraces. Perhaps the terrace wall of tract 4044 was constructed as early as the Hellenistic period. However, it is to be expected that over the centuries these terraces would have collapsed and have been rebuilt several times.[10] The second paleosol that can be identified with certainty is a red buried soil, which has been formed as a pocket in a depression in the bedrock, labeled as tract 4003 (fig. 8). Lithic artifacts tentatively date these preserved soils in the late Pleistocene (see below).

In 2007, we identified a series of walls on the summit of Palaiokastro with the help of aerial photographs (fig. 9). During the 2008 campaign we have mapped these walls in detail using a Total Station and GIS. In addition, photographs were taken of different types of masonry and the walls were related to the general geomorphology of the area by plotting them on a Digital Elevation Model. Two separate types of construction could be distinguished, while there were various other walls that did not clearly belong to either category. The earlier building phase (Phase A) consists of loosely joined polygonal masonry (figs 11-12)[11] and covers most of the site (fig. 10). These walls are at least 2 m thick, with the largest blocks on the outside placed with their longest sides perpendicular to the direction of the wall (fig. 11). There are no traces at all of mortar in this phase.

9 Brantingham *et al.* 2007.
10 Krahtopoulou & Frederick 2008.
11 See Winter 1971, 84-87.

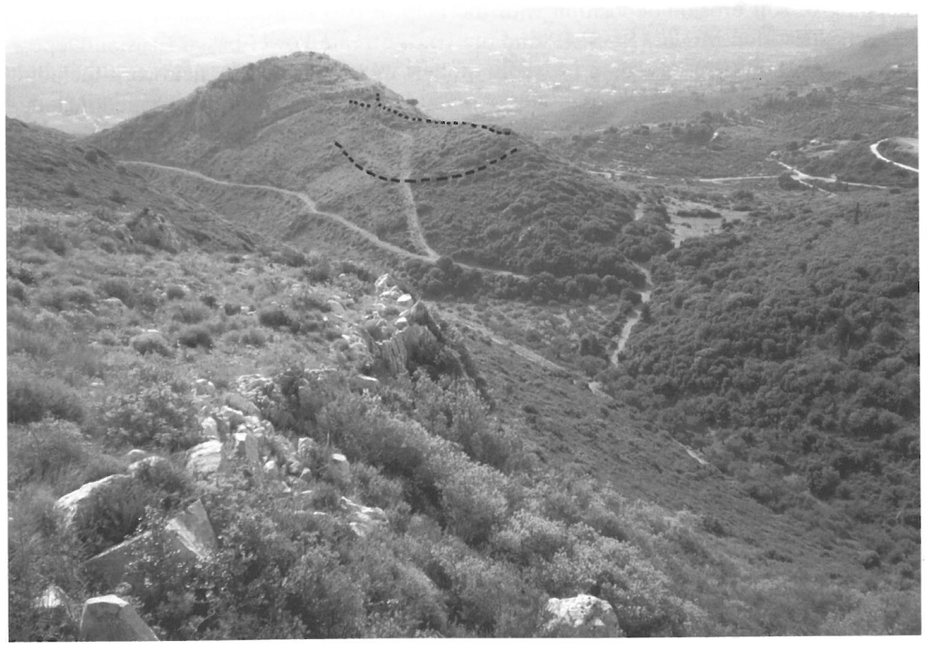

Figure 9. *Palaiokastro from the north-west, roughly indicating the line of fortifications visible from the opposite slope*

The layout of the walls belonging to Phase A seems to follow closely the topography of the hill. Many natural features, such as bedrock outcrops, have been included in the wall. A remarkable feature is a stretch of wall following the crest of the ridge over the lower summit of the hill (4502-4504 in fig. 10; see also fig. 12). The purpose of this wall, which divides the enclosed area into two parts, is as of yet unclear. Another peculiarity is the absence of wall remains in the north-east, below the highest peak of Palaiokastro. It is as yet uncertain whether this part of the wall has eroded away or never existed. Several stretches of isolated terracing and walls have been identified in the southern part of the enclosed area, which also may belong to Phase A. It is very difficult to date this phase, as no datable remains were discovered that can immediately be connected to the wall. The survey conducted in the area in 2007 has yielded finds ranging from the Geometric to the Late Roman period.[12] Among these is a substantial quantity of large pithos fragments, which have been dated to Classical-Hellenistic times. If our Phase A wall can also be dated to this period, it should be noted that, although it is of substantial size, the masonry and building style are very modest.[13]

12 Van Wijngaarden *et al.* 2007, 51.

13 The use of unworked limestone blocks and the fact that sections of the wall appear to be missing, give the impression that it was built in haste and, perhaps, was never finished.

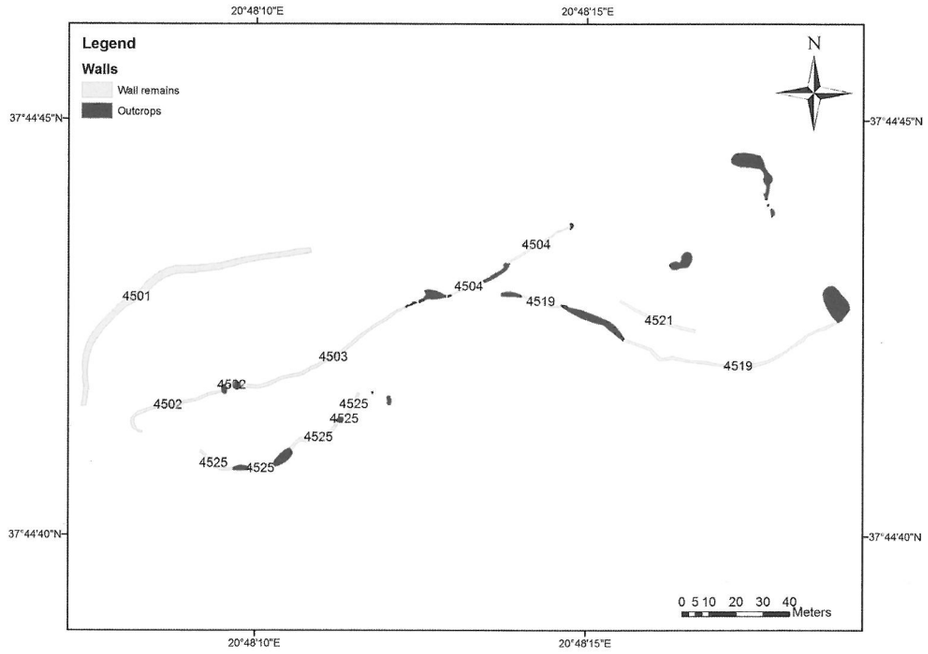

Figure 10. *Recorded sections of the Phase A fortification wall*

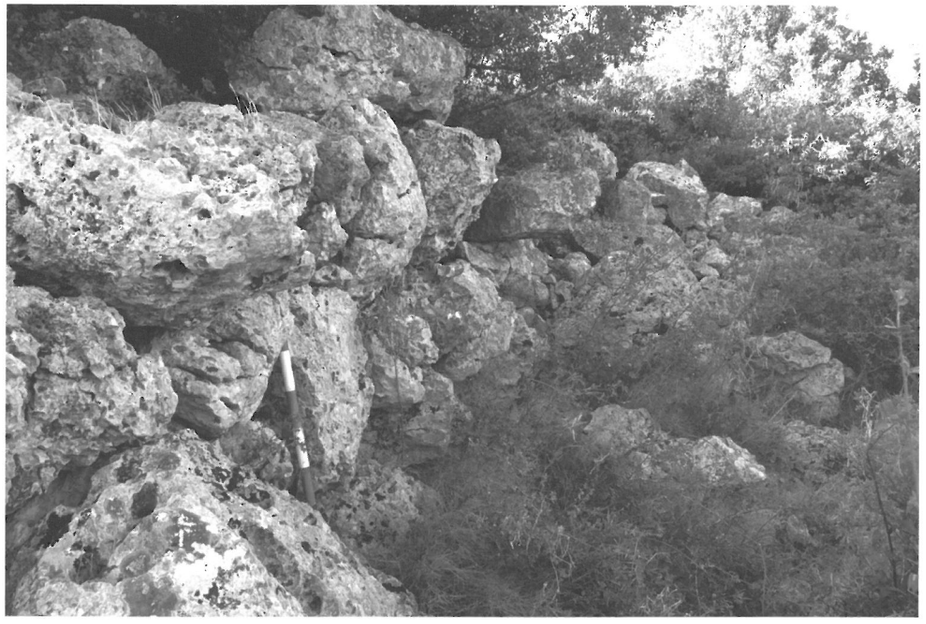

Figure 11. *Section of the Palaiokastro wall on the north side (4501)*

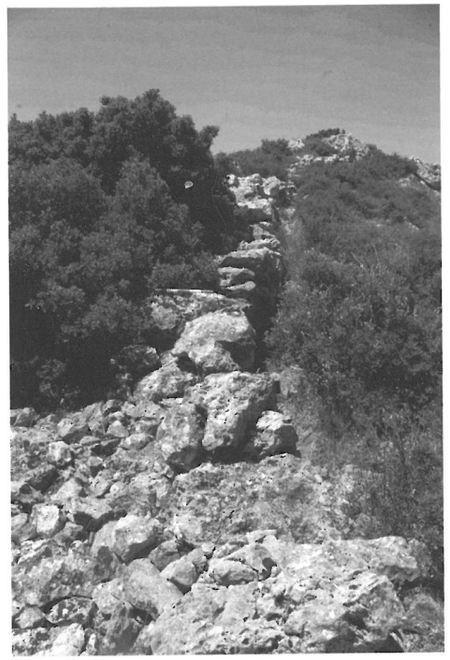

Figure 12. *Section of the Palaiokastro wall on the summit (4503)*

On the highest top of Palaiokastro there are various walls of a different building style (Phase B: fig. 13). All stones are cut in a roughly polygonal style without being dressed to such an extent which would enable a close fit. They all seem to be joined together with lime mortar. The walls include a U-shaped structure that was possibly an apse of a small chapel (4511-12 in fig. 13; see also fig. 14) and an enigmatic round structure cut into the ground that may have been a cistern. During the investigations by the 20th Ephorate of Byzantine Antiquities in 1991, these walls have tentatively been dated to the tenth century AD. The finds of the 2007 survey in the area included roof tiles that may be Medieval or early modern.

Lithics

As during the campaign of 2007, lithic finds constituted a substantial part of all collected materials (ca. 14%) and were widely distributed (in 41% of all tracts). The exact quantities of lithic artifacts in the area are difficult to assess due to the presence of natural flint. Preliminary inspection of the retrieved lithics suggests that both artifacts and production debris are present, as well as natural, unworked flint.[14] For field walkers it is often very difficult to distinguish natural from worked flint.

14 The technological and typological study of the lithic artifacts is supervised by G. Kourtesi-Phillipakis (Kapodistrian University Athens).

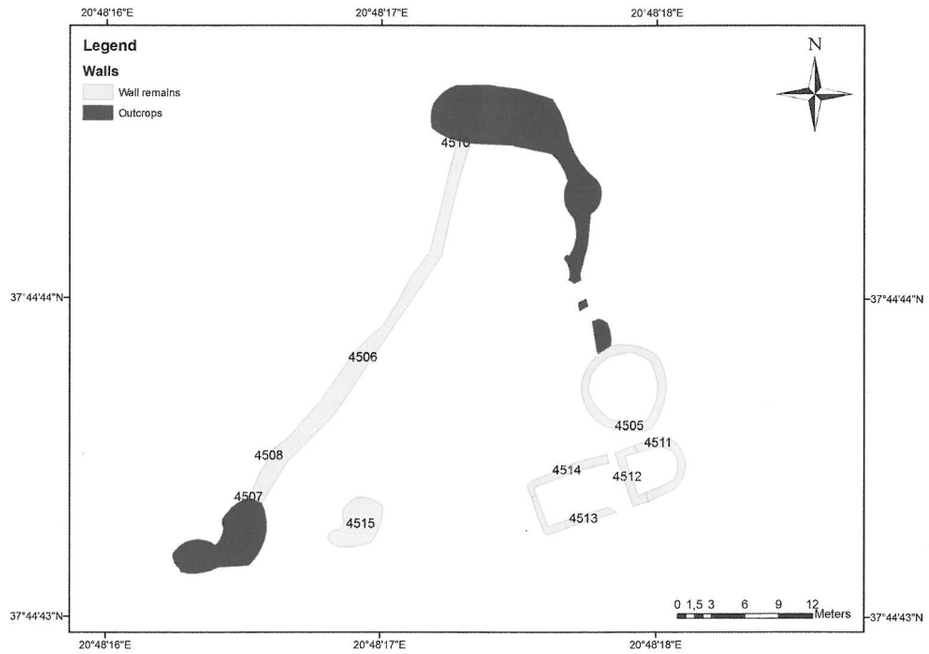

Figure 13. *Recorded sections of Phase B walls*

Figure 14. *Possible apse (left) in Phase B style masonry (4511-12)*

The "carpet" of lithics in the research area is difficult to interpret. The mountainous western part of research area B consists of Eocene and Oligocene limestones of the Vrachionas anticline.[15] The eastern slopes and foothills of these mountains and the gently sloping transitional zone towards the plain have Miocene sediments with extensive Holocene deposits. The distribution of lithic artifacts in both the mountainous zone and the lower part of the research area, must be the result of a wide array of *syn-* and *post-depositional* processes caused by natural and/or anthropogenic agents.[16] The two main (related) parameters determining the geomorphology in the area are tectonics on the one hand,[17] and surface processes such as erosion and deposition on the other.[18] With regard to the depositional settings in which lithic artifacts occur in research area B, a distinction can be made into four types.[19]

The first type of depositional setting occurs in the Holocene sediments in the transitional zone from the foothills to the plain. Lithics, artifacts as well as unworked natural stones that are found scattered in these soils probably have arrived here by erosion and sedimentation. Several concentrations have been attested within the general spread of lithics in this area.[20] One of these concentrations is Mouzaki Brouma in the south-east of our research area. After our brief inspection in 2005, this area was investigated in detail during the 2008 campaign, by archaeological field walking and by geological description and coring. The counting and collection of the artifacts confirmed the very high density of lithics at Brouma (fig. 2). In order not to obstruct our find processing, only representative samples of finds were collected, which were studied during the October campaign. The typological and technological study confirmed that only a very small proportion of the collected samples can be labeled as debris. There appears to be a very high quantity of artifacts, which can generally be dated to the Middle Palaeolithic (fig. 15). Mouzaki Brouma is situated in a low-lying plain, with brown Holocene soils which are nowadays cultivated mostly with olives. Our geomorphologic research indicates that no substantial anthropogenic soil movements have taken place in the area. Further study on soil samples and on the technology and typology of the artifacts themselves may shed light on the significance of these concentrations and establish in more detail the processes by which the soils and the lithics have been deposited.

In the mountains, three additional types of depositional setting of lithic artifacts can be discerned. One of these consists of bedrock slopes of moderate to steep angles, either bare (stripped of cover strata) or covered with (Holocene) soil. These bedrock slopes can generally be regarded as unstable surfaces, suffering from continuing erosion. In theory, it is possible that artifacts on such surfaces were buried after they had been discarded and were only recently exposed due to the disappearance of soil. However, it is equally possible that they came from elsewhere due to erosion and it is difficult to consider them to be *in situ*.[21] Several concentrations of lithics on the slopes of Palaiokastro hill that were attested during the 2007 and 2008 surveys belong to this second type of deposition.

15 Zelilidis *et al.* 1998.
16 Goldberg & Macphail 2006.
17 See also Tendürüs, Van Wijngaarden & Kars in press.
18 Stroosnijder 2005.
19 A more thorough analysis of the contextual deposition of lithic artifacts in Zakynthos is in preparation by E. Tourloukis.
20 See also Van Wijngaarden 2005, 68-69, 73 site 21.
21 Rick 1976.

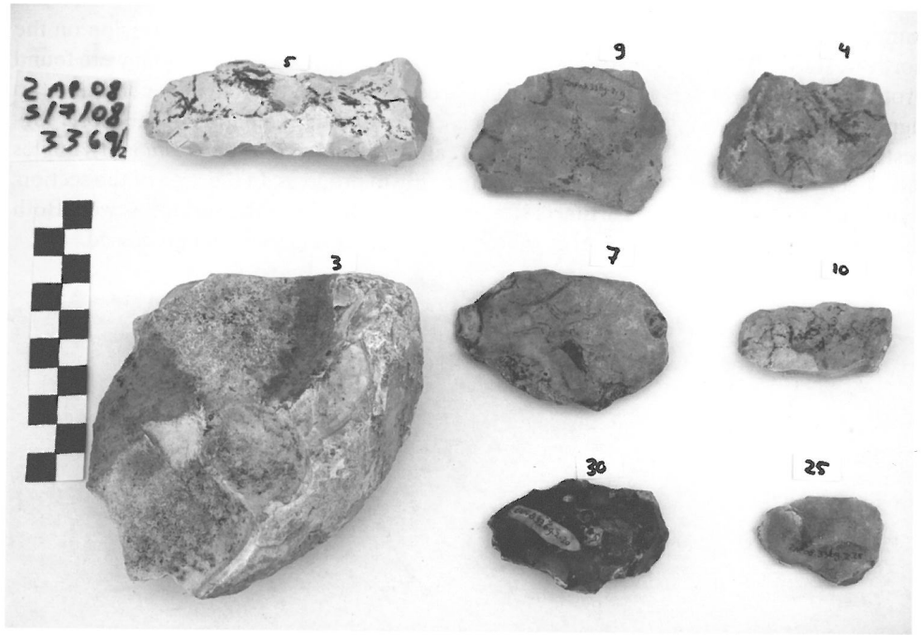

Figure 15. *Characteristic lithic finds from Mouzaki Brouma (tract 3369)*

A third type of depositional setting of lithic artifacts consists of high plateaus of generally flat surfaces, with soil cover and shrub-dominated vegetation. An example is provided by the setting of the concentration of lithics that was discovered in the western part of our research area B during 2007, above the Achiouri valley.[22] This plateau is situated at a high altitude and there are no surrounding higher areas where the material could have eroded from. That the artifacts are more or less *in situ* is also suggested by the presence of a paleosol, which was visible in an area where heavy bulldozing had taken place. At least one artifact was identified embedded in the uppermost part of this paleosol. A short and superficial examination of a sample from the assemblage allowed the identification of Mousterian typo-technological elements, but the co-presence of Upper Palaeolithic artifacts cannot, as yet, be ruled out. Moreover, several stages of the *chain d'opératoire* appear to have been present. Apparently, this specific lithic assemblage is a *mélange* composed of material belonging to different periods of the Palaeolithic.

Bedrock depressions and irregularities (karst landforms) which tend to preserve Pleistocene sediments are a fourth type of depositional setting of lithic artifacts in research area B. The importance of karstic features to study Palaeolithic societies in Greece has long been acknowledged.[23] Such features provided ample resources for hunter-gatherers, notably water, and they also have the tendency to preserve sediments. During the 2008

22 Van Wijngaarden *et al.* 2007, 51.
23 Runnels & van Andel 2003; Goldberg & Sherwood 2006.

campaign, lithic artifacts were found stratified in one such small karst depression on the north-western slopes of Palaiokastro hill (tract 4003) (fig. 16). The artifacts that were found protruding from a natural profile near a bulldozed road, are in fresh to mint condition (no signs of rolling, abrasion, etc.), and a superficial, macroscopic evaluation of the fabric suggests a lack of size-sorting. The lithic artifacts can be considered to be *in situ* and samples have been taken for OSL analysis, which is currently in progress. In the area of the section, a substantial number of lithic artifacts have been collected from the surface as well. Both the stratified finds and the finds from the survey are being analysed and processed.

Figure 16. *Karst depression on Palaiokastro hill with stratified lithic artifacts (tract 4003)*

Melinado

The ruined church of Ayios Dhimitrios at the locality of Melinado (figs 17 and 18) has four marble columns. All columns are monoliths, their lengths varying from 2.87-2.95 m, while their lower diameters range from 0.35-0.37 m and their upper diameters from 0.33-0.34 m. There is no fluting and all columns have a small ridge as stylized capital. The Ionian column bases were made of separate marble blocks, of which four are still present. The upper part of a fifth column serves as an altar inside the church and there are marble blocks in the walls of the church. The marble *spolia* can be associated with an inscription that was found on an altar stone inside the church and which refers to a certain Klinippa, whose parents devoted a statue to Artemis Opitaïda.[24] On epigraphic grounds, the inscription has been dated to the 3rd-2nd centuries BC. The marble columns and the four column bases are regular in size and of good workmanship. The stylized capital and the fact that all columns are regular monoliths seem to suggest a Roman date.

Marble does not occur naturally on the island of Zakynthos and the *spolia* in the church of Melinado probably belonged to an ancient monumental building. Their presence and

24 Riemann 1879, 8; Kalligas 1969, 279; 1993, 62.

Figure 17. *The church of Ayios Dhimitrios at Melinado before its destruction in the 1950's. Courtesy: the Zakynthos museum for Byzantine and Post-Byzantine antiquities (20th Ephorate of Byzantine Antiquities)*

Figure 18. *The church of Ayios Dhimitrios in its current state*

the inscription have led to suggestions that a temple of the goddess Artemis was present in the area.[25] Trial excavations below the floor in 1957 did not reveal ancient remains, indicating that the church does not stand on the actual spot of an ancient temple.[26] The current structure, which dates to the 19th century, was built inside the ruins of a larger Byzantine church.[27] A stretch of Byzantine wall, incorporating brick, field stones and mortar is still visible immediately to the south. The ancient *spolia* were probably brought to adorn the Byzantine church. The question is whether the ancient monumental building to which they once belonged was situated in the near vicinity of Melinado.

The area around the church of Ayios Dhimitrios was extensively covered by archaeological field walking in 2008. Only very small quantities of finds were attested, mostly dating to (early) modern periods. No concentrations of ancient finds were found, the only exception being the *spolia* in the church themselves. During our geological research in the area of Melinado, 29 corings were conducted by hand-auger to a maximum depth of 5.50 m. Study of soil samples from these corings enabled the identification of four basic layers of soil, which represent different phases of erosion and sedimentation. In layer II, immediately below the plough soil to a depth of ca. 1.50 m, fragments of modern tile were attested. In the layer underneath (layer III), to a depth of ca. 4.50 m, plant remains and fossilized olive and pine pits, were attested at various depths, indicating older surfaces. In a few instances, these fossilized plant remains were accompanied by tiny fragments of pottery (fig. 19). These archaeological remains were generally too small to be determined chronologically, but they have abrasion marks that indicate that they were part of erosion processes.

The formation of the landscape in the area of the church of Ayios Dhimitrios is determined by two alluvial fans: one to the north-west near Lagadakia and another to the south-east near Machairado. These fans were formed during the Pleistocene, when sediments from the Vrachionas mountain range were transported downhill by fluvial processes.[28] These alluvial fans themselves have been subject to subsequent surface erosion. For many centuries, the area of Melinado was an active accumulation zone in which the landscape changed continuously and rapidly. During the last two centuries, the dynamic patterns of erosion have stagnated due to human activity, notably the creation of a network of drainage channels. If remains of an ancient temple or sanctuary are present in the area, they are likely to be buried under several meters of deposit.

The church of Ayios Dhimitrios was still in use in 1953 when it was severely damaged (figs 17-18). The marble columns of the church figure prominently in the stories of local inhabitants. According to two independent informants, the columns served as spindle whorls or loom weights for giant female creatures. These creatures, who are referred to as *Nereids*, threw the columns from the sea to the spot where the church now stands. These stories told by local inhabitants may reflect a dim memory of the transportation of the marble columns from overseas. More importantly, they show the significance of archaeological remains in the local folklore of Zakynthos.

25 In fact, the community (Δήμος) of which Machairado is the main village is called Artemision.
26 Kalligas 1993, 62. Remains of the early Christian church were found, see *BCH* 1958, 727.
27 Konomos 1979, 146-150. The Byzantine church was probably constructed ca. 1478. According to a description of I. Kourtsolas a monumental church was still standing at the end of the 18th century. The current building, must have been built after Kortsolas visit.
28 Livaditis & Alexouli 1993

Figure 19. *Pottery fragments and fossilized plant remains at 1.60-1.70 m. depth, from a coring in the area of Melinado (tract 5026)*

Preliminary conclusions

The 2008 campaign of the Zakynthos Archaeology Project focused on the transitional zone between the foothills and the plain. Together with the area surveyed in 2007, we now have a continuous transect from the Vrachionas mountain range into the alluvial plain. Preliminary conclusions are:

- There is a thin spread of ancient archaeological material from different periods in the plains and foothills. Even though several concentrations of lithics and ancient pottery can be identified, much of the material in the plains appears to be the result of erosion and sedimentation.
- Historical aerial photographs have in various instances provided us with indications for pre-modern use of the landscape.
- Much of the ancient habitation in the foothills and the plain was probably associated with agricultural activities. The heavily worn ceramic sherds in these areas most likely come from such farmsteads and hamlets. We have probably located one of these farmsteads of the Hellenistic-Roman period in the foothills of Lagopodo. The Roman finds among the material collected at Mouzaki-Brouma may indicate a similar installation.
- Lithic artifacts and debris occur everywhere in the research area. In the plains and foothills there are a number of concentrations of lithic finds in Holocene deposits, of which Mouzaki Brouma is the most notable. Most of this material appears to date to Middle Palaeolithic times. The exact ways in which these concentrations have formed

are, as yet, not altogether clear.

- In the mountains, there are a few places where Middle Palaeolithic artifacts and debris have been attested *in situ*. Sources of natural flint and chert also occur here.
- The entire hill of Palaiokastro constitutes a large and important archaeological site, with evidence for human activity from prehistory to the Middle Ages. Of particular interest is an area in the west (tract 4044), where mud-brick and ancient pottery appear to be *in situ*.
- At some time in antiquity, probably during Classical-Hellenistic times extensive fortifications were built at Palaiokastro. Defensive structures were also built during the Middle Ages. The fortifications confirm the prominent position of Palaiokastro between two routes leading from the plains into the mountains of Zakynthos.
- The landscape of our research area B has been subject to severe erosion and sedimentation. The geography of the area has changed significantly since antiquity.

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