

The Kislovodsk basin in the North Caucasian piedmonts – archaeology and GIS studies in a mountain cultural landscape

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SUMMARY - *The Kislovodsk basin in the North Caucasian piedmonts – archaeology and GIS studies in a mountain cultural landscape* - Landscape archaeology in a mountain terrain must take into account not only the remainders of a large variety of human activities, but also of a changeable and often extreme environment. The Kislovodsk basin in the North Caucasian piedmonts offers an excellent basis for such studies, due to the substantial archaeological research, methodical environmental studies, and one of the first multileveled archaeological geo-information systems in Russia. The history of settlement in this area begins in the Aeneolithic period in the 5th millennium BC. During the Early Iron Age Koban culture (10th-6th century BC) and the Early Medieval Alanic Period (5th-8th century BC), however, human presence reached the highest intensity, with a dense settlement system and other sites in an apparent highly organised territorial structure. The paper gives an overview of the development of human activities in the research area, and outline issues and methods of further research. Among these are GIS analysis, a systematic survey of aerial photos, excavations, seasonality analysis, and paleo-environmental studies. An additional aspect of our work is the combination of the results of the territorial investigations with social analysis obtained from the large body of burials excavated in this region.

RIASSUNTO - *Il bacino di Kislovodsk nella fascia pedemontana nord-caucasica – archeologia e applicazioni GIS in un paesaggio culturale di montagna* - L'archeologia del paesaggio in un territorio montuoso deve tenere in considerazione non solo le conseguenze di una grande varietà di attività umane, ma anche di un ambiente mutevole e spesso estremo. Il bacino Kislovodsk nella fascia pedemontana nord-caucasica offre un'eccellente base per questo tipo di studi per le sostanziose ricerche archeologiche e i metodici studi ambientali in esso condotti, ed è uno dei primi sistemi geo-informativi archeologici multi-livelli in Russia. La storia insediativa in quest'area inizia nel periodo Eneolitico, nel V millennio a.C. Durante la cultura Koban dell'antica età del Ferro (X-VI sec. a.C.) e il periodo altomedievale alanic (V-VIII sec. a.C.), comunque, la presenza umana raggiunse la più alta intensità, con un sistema insediativo denso e altri siti in una struttura territoriale apparentemente ad alta organizzazione. L'articolo fornisce uno sguardo generale sullo sviluppo delle attività umane nell'area interessata dalla ricerca e sottolinea indirizzi e metodi per ulteriori indagini, fra le quali analisi GIS, una ricognizione sistematica di fotografie aeree, scavi, analisi stagionali e studi paleo-ambientali. Un ulteriore aspetto del presente lavoro è la combinazione dei risultati delle indagini territoriali con analisi sociali ottenute dalle numerose sepolture scavate in questa regione.

Key words: North Caucasus, landscape archaeology, GIS (geoinformation system), aerial archaeology, field terraces

Parole chiave: Nord Caucaso, archeologia del paesaggio, GIS, archeologia aerea, terrazzamenti

1. INTRODUCTION

Human existence in a mountain terrain landscape faces much more vigorously than in most other ecological milieus the impact of an extreme environment onto its principal ways of life. Subsistence strategies, spatial and social organisations, which have left its traits in the archaeological finds we are today dealing with, have been influenced by a great deal of different factors, but always facing the problems of an

existence at the periphery of the human oecumene. Not that a life in mountains knows only hardship. Under favourable conditions it provides a large variety of food supplies, raw materials and most of all safety and freedom from protection of the terrain. Nevertheless, subsistence strategies have to adapt to the specifics of the environmental conditions, a fact which in primordial societies have been mainly solved by the development of decentralised seasonal mountain agriculture systems.



Fig. 1 - Caucasia and the Kislovodsk region.

Fig. 1 - Caucasia e la regione di Kislovodsk.

Archaeology in mountain areas has a long tradition. Among the earliest sites investigated in the history of archaeology are the large cemeteries of Hallstatt in Austria (Kromer 1959) or Koban in the Northern Caucasus (Virchow 1883). Methodological coherent research strategies to back such sites with the information about the contemporary settlement dynamics in the same areas, however, have only recently been developed (Primas 1999; Della Casa 2000; Della Casa 2002: 61-85; Rendu 2003).

The conception of a cultural landscape as a unity of a variety of human activities in a natural setting, which at the same time determine these activities and is altered by them, is a relative new concept in archaeology. In the Northern Caucasus (Fig. 1) studies with such a conception have been developed only during the last years, particularly in the Kislovodsk area (Arzhantseva 1998; Afanas'ev *et al.* 2002; Afanas'ev *et al.* 2004, 50-88; Afanas'ev & Korobov 2005).

This area with its exceptional level of archaeological research – more than 800 archaeological sites are known (Afanas'ev *et al.* 2004: 89-200), in more than 600 locations smaller archaeological investigations were carried out and in several larger excavations have taken place – offer an excellent case-study to examine the dynamics of a mountain community including aspects of subsistence, social organisation and territoriality. Rich burials furthermore permit the reconstruction of the social organisation of these communities from the point of their self-representation (Korenevskij 1990; Korobov 2003a; Reinhold 2005a; 2005b). It

adds a sociological and socio-economic perspective to the spatial studies and allows cross-examining the social connotation of settlement patterns and territorial structures.

2. MOUNTAIN CULTURAL LANDSCAPES

Beside the strong influence of environment and terrain (Fig. 2), one of the major results of mountain cross-cultural geographic studies is the fact that the social organisation of these communities is more or less openly reflected in the settlement and seasonal migration pattern, and the agricultural system.

Since resources in different altitudes and parts of mountain valley vary greatly, adaptive strategies for their optimal use include a broad spectrum of permanent and temporal habitation and agricultural sites (Ehlers & Kreutzmann 2000; Bannwart 1999, 30-55; Giovanoli 2004, 22-49). Multivariate subsistence strategies including seasonal migration or short-time habitation for a variety of reasons, e.g. herding, mining, exploitation of wood, herbs or hunting, are known from nearly all contemporary mountainous societies (Hütteroth 1959; Grötzbach 1982; Rhoades & Thompson 1975; Stadelbauer 1984; Kreutzmann 1996; Price & Thompson 1997). These systems are strongly predisposed by the general social and political organisation of the communities in the respective areas, which regulate ownership, access to resources, or mobility. Important factors are e.g. the size of the population, their level of seden-

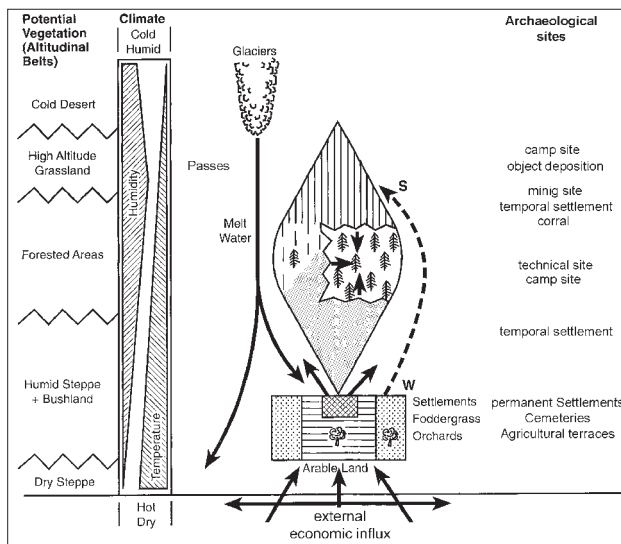


Fig. 2 - Mountain agricultural systems (after Ehlers & Kreuzman 2000, fig. 1) and archaeological sites.

Fig. 2 - Sistemi agricoli di montagna (da Ehlers & Kreuzman 2000, fig. 1) e siti archeologici.

tary or agricultural techniques, but also the presence or absence of a central power, a dispersed or village-organised settlement structure, the organisation of the families, or the regulations which control the ownership of land and access to other resources (Fig. 3).

It is not always easy to find correlates which represent such factors in the archaeological record, however, we will see, that to consider some of this aspects is very helpful for the understanding of the spatial structure of the Kislovodsk antiquities.

Cultural landscapes in mountain areas hence normally include different habitation sites, work places and agricultural features in different heights. They are

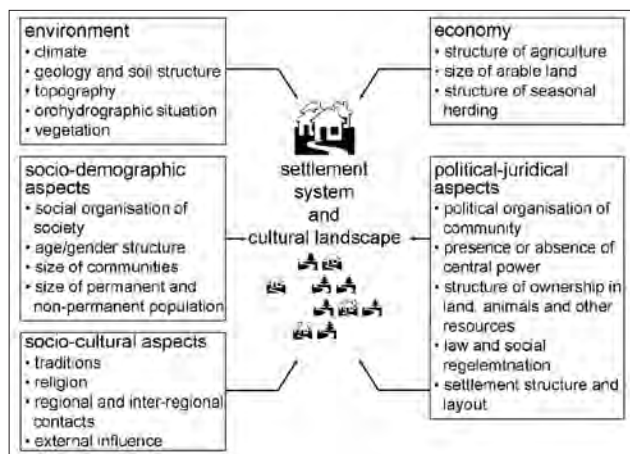


Fig. 3 - Factors influencing a mountain cultural landscape (adapted after Bannwart 1999: fig. 3).

Fig. 3 - Fattori che influenzano un paesaggio culturale di montagna (adattato da Bannwart 1999, fig. 3).

related to the seasonal exploitation of the various ecological zones, like herding on mountain Alps, wood cutting or hunting at the wooded slopes of mountain valleys, or crop growing and haymaking in open landscapes. Frequently the habitation sites related to these different activities vary in their size, structure and topography. Whereas larger and permanently inhabited villages are generally situated in the valleys, sites related to summer herding are inhabited only seasonally, and differ frequently considerably in their size, but also in architecture and layout (Giovanoli 2004). Their structure is adapted to keep the livestock, while in the lower villages a broader spectrum of activities is reflected in the structure of a farmstead, or a village. If we translate such functional differentiations into the archaeological record, we have to consider larger settlement sites with a layout adapted to “village-life” in the lower parts of the valleys, and small sites e.g. with corrals or other features related to stock keeping in the higher parts (loc. cit; Rendu 2003: 333-356). The large amount of larger and smaller agricultural buildings, so typical for alpine landscapes, of course would be traceably only under ideal circumstances. Yet, the Caucasian mountain agriculture in some areas knew similar settlement diversity, including *Maiensässes* and *Alps* (Stadelbauer 1984: 210-211, Abb. 3).

Beside settlements related to seasonal herding activities, other sites with a special function and a non-permanently habitation must be predicted from ethnographical and historical analogies. This can include hunting camps, mining and metal working sites, or watchtowers. Also the likelihood of religious places, like the small chapels along pilgrimage paths in the Alps, or the tshörten at similar paths in the buddhist Himalayan should not be forgotten.

A very different aspect, but not less important for the layout of a cultural landscape, are features related to agriculture. Landscapes are principally structured by the placement, types and size of fields, woods and pasture. They reflect local traditions of land-use as well as ownership structures, a centralised or de-centralised management. Mountain landscapes, moreover, are in addition frequently shaped by a sophisticated system of agricultural terraces sometimes combined with irrigation systems in order to increase the area for crop farming. Such structures have only recently been included into the archaeological discussion, after their prehistoric or Early Medieval origin was proved in the Alps (Raba 1996) as well as in the Caucasus by field studies (Aglarov 1986, 1998; Afanas’ev *et al.* 2002; Korobov 2002, 2004).

Della Casa (2003: 11-13) has recently proposed

a functional taxonomy of the archaeological sites in mountain areas according to their function and consequence in a prehistoric cultural system. These influences not only their frequency and layout, but also the probability to be identified as an archaeological site. A comparable concept was earlier developed by V.B. Kovalevskaja (1984: 12-16) for the situation in the North Caucasian piedmonts, where clusters of archaeological sites significantly correspond with areas of favourable environmental niches as well as with densely settled areas in the pre-soviet period¹. The archaeological landscapes thus are similarly favourable for settlement and the detection of sites by the modern population.

The scaling of the probability to find archaeological sites is a very helpful instrument, since it helps to explain the scarcity or absence of site types that must have been present. It must, however, adapt not only to the specific situation of the research area, but also to different periods. As we shall see, the “periphery” of the human oecumene in the Kislovodsk basin is by no means stable, and the type of settlement structure influences the factor of “centre” and “periphery” profoundly.

3. THE KISLOVODSK BASIN AS A CASE STUDY AREA

The Kislovodsk basin (Fig. 4) is situated at the northern piedmont zone of the central Caucasus range, and formed by the interflow of four minor tributaries into the River Podkumok. They shape a flat alluvial fan on which nowadays the modern spa Kislovodsk is situated.

Flat plateaus divided by canyon like valleys dominate the topography of the basin. Towards the north the basin is separated from the North Caucasian steppe by the Borgustan range, a plateau with a steep southern edge overlooking the entire Kislovodsk basin (Fig. 5). To the south the plateaus of the Kabardinka range separate it from the Kič-Malka Valley coming down from Mount El'brus, and towards the east the Dzhinal range form a similar barrier. The Podkumok Valley directs the major communication route in an east-west direction, yet, is divided from the Northern plains by a small gorge. These geographical parameters make the Kislovodsk basin an ideal arena for landscape archaeological studies. It is a comprehensible geographical unit

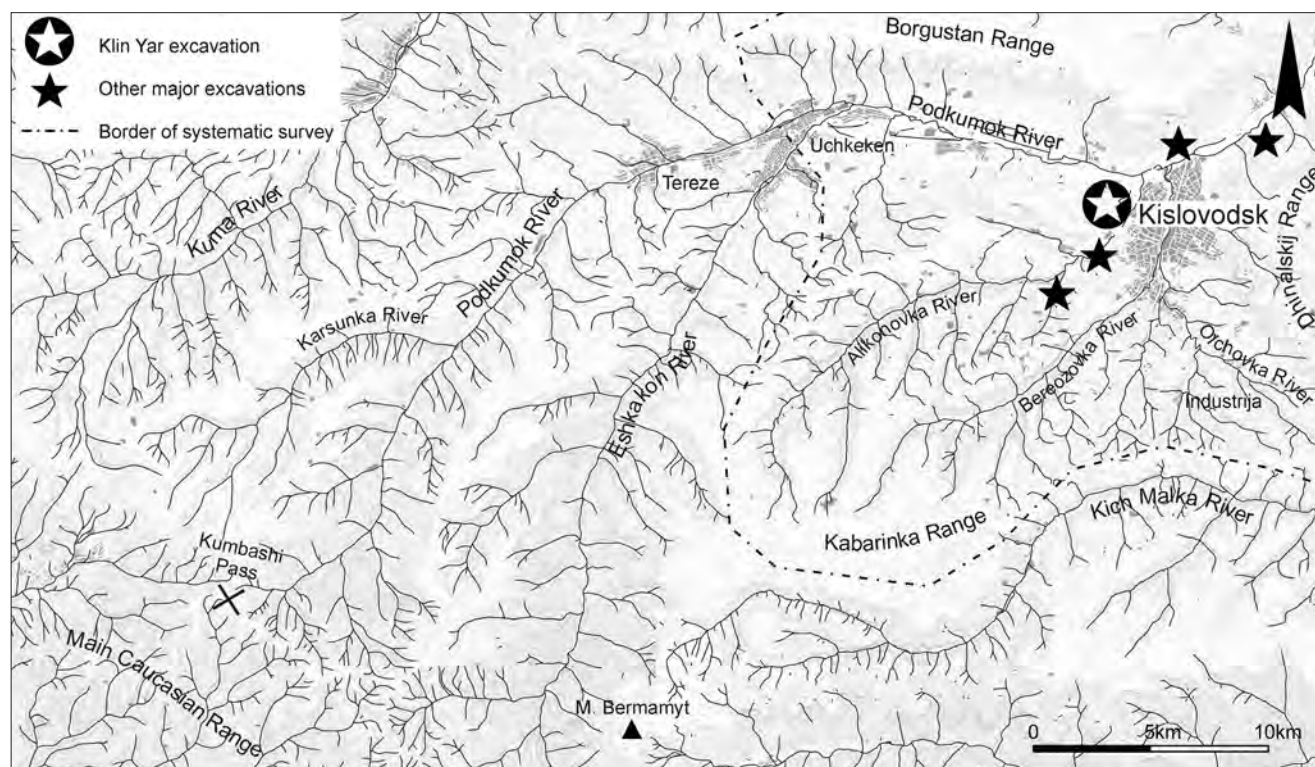


Fig. 4 - The Kislovodsk Basin. Topography, major archaeological excavations and area of intensive survey.

Fig. 4 - Il bacino di Kislovodsk. Topografia, principali scavi archeologici e area interessata da ricognizione intensiva.

¹ During World War II large parts of the North Caucasian peoples were deported to Kazachstan, their villages were destroyed, and a resettling in some areas after the return of the inhabitants after 1956 was not allowed. The modern settlement structure thus does not reflect the traditional settlement pattern in these areas.

Fig. 5 - Borgustan Range south of Kislovodsk. 1= Klin Yar, Iron Age and Alanian sites; 2= Alanian stronghold Mirnyj 1; 3= Alanian city at Rim gora; 4= Alanian signal posts; 5= Alanian stronghold Mirnyj 2.

Fig. 5 - Borgustan Range a sud di Kislovodsk. 1= Klin Yar, siti dell'Età del Ferro e alariani; 2= fortezza alarianiana Mirnyj 1; 3= città alarianiana a Rim gora; 4= postazioni alarianiane significative; 5= fortezza alarianiana Mirnyj 2.



with an internal structure in several geographic and economic sub-areas, with a vertical component, and a major North-South transversal. The upper Podkumok valley leads into the mountains east of mount Èl'brus and towards the important Kluchori Pass, which give way either to a route leading to the Black Sea coast near the modern town Suchumi, or to the ore rich Svanetia with its ancient mining areas (Čartolani 2001). This ancient route along the valley of the Podkumok in the Early Middle Ages was part of the famous Great Silk Road passed nearby modern Kislovodsk (Kuznetsov 1993: 23-46).

The area today is only slightly wooded, although this might be the result of the long lasting human impact on its nature. It is rich of mineral waters and has a mild mountain climate with summer rain and mild winters. The modern land-usage restricts agriculture to the valley bottoms, the higher areas are used only for haymaking and pasture, but also this may be a rather modern development.

The Kislovodsk area is one of the first areas in Russia, where an archaeological geoinformation system (archGIS) was developed (Afanas'ev 2004; Afanas'ev *et al.* 2004: 49-62). The geographic basis of this archGIS at the moment includes topographic maps in different scales, digital maps, satellite images with a resolution of 15-30 m (Landsat) to 4 m (KFA-1000) and aerial photos of different years. An environment study including vegetation and climatic factors that allows to model the palaeo-climatic conditions and the biocapacity form a specific module in the archGIS (Afanas'ev *et al.* 2002: 74-75; Afanas'ev *et al.* 2004: 78-88; Afanas'ev

& Korobov 2005). The archaeological map published in 2004 includes more than 800 sites ranging from the Aeneolithic to the 19th century. They are the result of more than hundred year's archaeological research. Already in 1666 the famous Turkish traveler Evlia Chelebi made a first description of archaeological remains near Kislovodsk. The scientific archaeological investigation of the region, however, started only after the accession of the Western Caucasus to the Russian Empire in the beginning of the 19th century. After the Kislovodsk fortress was built in 1803 as a special defense of the spa, many scholars combined their rest with investigations in the surroundings of the town. This tradition was continuing after 1917 till the post-WWII time. During of the huge reconstruction of the spa's infrastructure starting at the end of 1950's, more and more archaeological sites and objects were discovered, especially Iron Age and Early Medieval cemeteries. The main part of work on these sites was made by local amateurs (N.M. Egorov, N.N. Micha'lov, A.P. Runič). Their enthusiasm, nevertheless, form the background for future research undertaken by the following generation of local professional archaeologists (G.E. Afanas'ev, S.N. Savenko, Ja.B. Berezin) (Afanas'ev *et al.* 2004: 9-49). The long history of archaeological surveys in the Kislovodsk basin leads to that fact that in the 1990's it was the best-investigated area in the whole Northern Caucasus. The new stage of the research started in 1996 when G.E. Afanas'ev initiated the creation of the archaeological GIS "Kislovodsk". D.S. Korobov, S.N. Savenko and G.E. Afanas'ev systematically surveyed all known sites and poor investigated places. From 1996 to 2000 the quantity of the known sites near Kislovodsk thus was doubled. All locations were

shortly visited, a photo-documentation was made and surface material collected. In 2001 the detailed investigation of the Early Medieval strongholds was started by D.S. Korobov. The archaeological database today includes beside information about the archaeological research a photo documentation, micro topographic data and information about test trenches in some of them. In addition, a systematic investigation of the aerial photos has been started. During the last years it focused on the localisation of medieval strongholds and agricultural terraces (Afanas'ev *et al.* 2002; Afanas'ev *et al.* 2004: 71-86; Korobov 2002, 2004). Settlement structures, others than the general topographical situation of the sites were only discovered during the 2004 field season (Korobov & Reinhold 2005a, 2005b). This information level, however, promise to be very fruitful in particular, when combined with an existing digital elevation model.

A precise dating of the sites as well is still in process. So far the settlement ceramic of most periods is not very good dated. From the earlier periods, moreover, excavated settlement material is practically missing. Also no radiocarbon dates are available for the region so far. At places where cemeteries and settlements are combined, however, the burials provide reliable arguments for the dating of habitation at the settlement (Fig. 6). Substantial excavations in burial mounds of the Bronze Age (Korenevskij 1990), flat cemeteries of

the Iron Age (Dudarev 1999, 2004) and catacomb cemeteries of the Sarmatian and Alanic period (Afanas'ev & Runič 2001; Flërov 2000) allow to date the cemeteries considerably precise. Thus, at least for the Early Iron Age (Koban culture) and the Early Medieval Alanic period relatively long periods of inhabitation can be postulated for many places. Archaeological arguments for long site continuity can be added: the remainder of a complex stone architecture, or thick cultural layers. The number of settlement excavations or sites with open cultural layers is not very large, but substantial enough to form reliable working hypotheses with such parameters. A long continuity in habitation thus must be considered for many sites, which is a very important factor for the application of GIS analysis.

Like the question of the period a site was inhabited, a functional classification must at the moment base rather on general arguments, than on archaeological excavations. For the wide spectrum of settlements in the research area that includes open settlements, fortified large settlements, small-fortified strongholds (*Wehrdörfer*) and watchtowers, an index of criteria (Fig. 7) has been developed to predict their function. This, however, has not yet been systematically adapted for all periods, but already allows to outline some first ideas about the settlement structure. Burial places, as mentioned, are easier to classify and date, since they differ from period to period and have been thoroughly excavated and studied.

	Archaeological cultures	Time Frame
Modern Era	Russian Colonisation	1803 foundation of fort Kislovodsk
	Karačai Period	~ 18th/19th century AD
	Kabardinian Period	~ 16th/17th century AD
	?	
Early Medieval	Late Alanic Period	10th to 12th century AD
	Early Alanic Period	5th to 9th century AD
	Pre-hunnic Period	2nd to 4th century AD
Iron Age	Sarmatian Era	1st to 3rd century AD
	?	
	Late Koban Culture	7th to 5th century BC
	Classical Koban Culture	10th to turn of 8th/7th century BC
Bronze Age	Early Koban Culture	13th to 11th century BC
	?	
	North Caucasian Cultures	End of 3rd millennium to 15th/14th century BC
	Majkop Culture	Mid of 4th to end of 3rd millennium BC
	Aeneolithic	5th to mid 4th millennium BC

Fig. 6 - Chronological periods in the Kislovodsk area.

Fig. 6 - Periodi cronologici nell'area di Kislovodsk.

topographic situation	<ul style="list-style-type: none"> • protected places e.g. on promontories or isolated hills • at plateau edges • on the plateau • on slope below rock faces • on slope in open landscape • in the valley • in caves • at passes
topographical context	<ul style="list-style-type: none"> • distance to water (source, river, mineral source) • exposition • height (i.e. vegetation zone)
size	<ul style="list-style-type: none"> • area of archaeological structures • area of surface finds
fortification	<ul style="list-style-type: none"> • natural • ditch • wall or rampart
remains of architecture	<ul style="list-style-type: none"> • towers • houses • other architecture
archaeological material	<ul style="list-style-type: none"> • quantity of finds • quality of finds • excavation
archaeological context	<ul style="list-style-type: none"> • relation to other sites • presence of cemetery and distance from it • relation to agricultural structures, e.g. terraces, irrigation

Fig. 7 - Functional classification of habitation sites by topography and other criteria.

Fig. 7 - Classificazione funzionale dei siti abitativi secondo la topografia e altri criteri.

Another important archaeological source, the large quantity of agricultural features including field terraces, irrigation (?) channels and ancient paths have only recently been included into the database. The unique preservation of this landscape features is based on the fact that the surroundings of Kislovodsk were practically deserted at least from 14th century AD until the erection of the Russian fortress in 1803. That means that in contrast to other regions in the North Caucasus, where terraced agriculture is still practiced today, the field terraces of the Kislovodsk basin must undoubtedly attributed to the Medieval or even prehistoric inhabitants. By archaeological finds and GIS studies made in a test area, the terraces were at least in the Alanic period (Korobov 2004) part of the cultural landscape, but rather than not have their origins in earlier epochs. Their systematically investigation was started only in 1997 including soil studies (Afanas'ev *et al.* 2002; Skripnikova 2004; Turova *et al.* 2003). But even now it is possible to predict the area of their existence and for some of them there are archaeological arguments to date them (Korobov 2005). The agricultural terraces

prove the high sedentary character of the ancient population in the Kislovodsk basin, and give an impression of the principal area used for crop farming.

4. THE PRINCIPAL EVOLUTION OF THE KISLOVODSK CULTURAL LANDSCAPE

A short introduction into the archaeology of the area will outline the present ideas about the stages of human occupation in the research area. It will point also on still open questions and aspects of further research.

The first human presence in the Kislovodsk basin can be dated into the Aeneolithic period (5th-Mid 4th millennium BC.). Mesolithic or Neolithic sites so far are known only from the neighbouring areas (Bader & Cereteli 1989: 100-104), a fact which is usually attributed to the lack of proper silex raw material in the Kislovodsk area. Two certain Aeneolithic sites, however, are known, that have indeed evidence of permanent settlement (Korenevskij 1998: 96-103) (Figs 8, 9). As Korenevskij (*loc. cit.*: 106) notes, the sites are situated at promontories out-

side valuable grounds for agriculture, but thus resemble contemporary sites in the neighbouring regions. Agriculture is likely, but not proven. From an osteological perspective this period in general shows very heterogeneous subsistence strategies, obviously with strong adaptations to local conditions and varying importance of cattle, pigs and wild animals. Also in the Kislovodsk sites hunting is attested by a percentage of 25% wild animal bones – deer, capricon and boar.

The following Early Bronze Age (Mid 4rd-3rd millennium BC) sees the first real emergence of settlement in the Kislovodsk basin, as well as the first major human shaping of the landscape (Fig. 8). Where archaeological investigations have been taken place, cultural layers up to 0,5m including storage pits as well as architecture are known from settlements of the Majkop culture (Munčaev 1994: 174-178; Korenevskij 1998: 103-112). The size of these sites is not very large, mostly less than 0,5ha, but they must be considered as more or less permanent inhabited. A cluster of such settlements is located in the lower parts of the Alikonovka valley. The sites are situated on open, flat ground at the plateau edges, overlooking the canyon like Alikonovka valley in the vicinity of arable soils (Korenevskij 1998: 106). Burial mounds are found close by, a further argument for permanent inhabited settlements. An other such cluster is found in the Kabardinka valley, where small scale excavations have been taken place, and a third perhaps at the junction of Alikonovka and Podkumok (*loc. cit.*: 104-105).

More perceptible archaeological features than the settlements are the huge burial mounds, the famous Caucasian kurgans, which characterise this period. Their diameter reaches up to 60m with heights of 2-5m. These mounds are generally found in groups, situated at highly visible places along the course of the river Podkumok and its tributaries.

Where excavations have been taken place, most of the kurgan groups include also mounds of the following Middle Bronze Age (Korenevskij 1990). Thus a precise dating is not always possible. However, the mound groups, which include apparently kurgans of the Majkop culture, already reveal a complex territorial structure. From their elevated positions at the higher river terrace they control the major east-west communication route through the Podkumok valley, as well the access to the valleys of all major tributaries. The distance between the kurgan groups is usually 2,5-4 km. In the Alikonovka valley also the settlement clusters seem to keep these distances, so that a kind of territorial organisation can be predicted already in this first period of sedentary life in this area. The sites are in general found at locations with a good overview over the central Kislovodsk basin, and so far also only three sites are found in heights over 1200 m. Yet, like in other micro-areas (Munčaev 1994: 171, map 3), the Majkop culture represents the first pioneers that visibly settle up the mountain valleys and reach even some of the upper parts of the North Caucasian valleys.

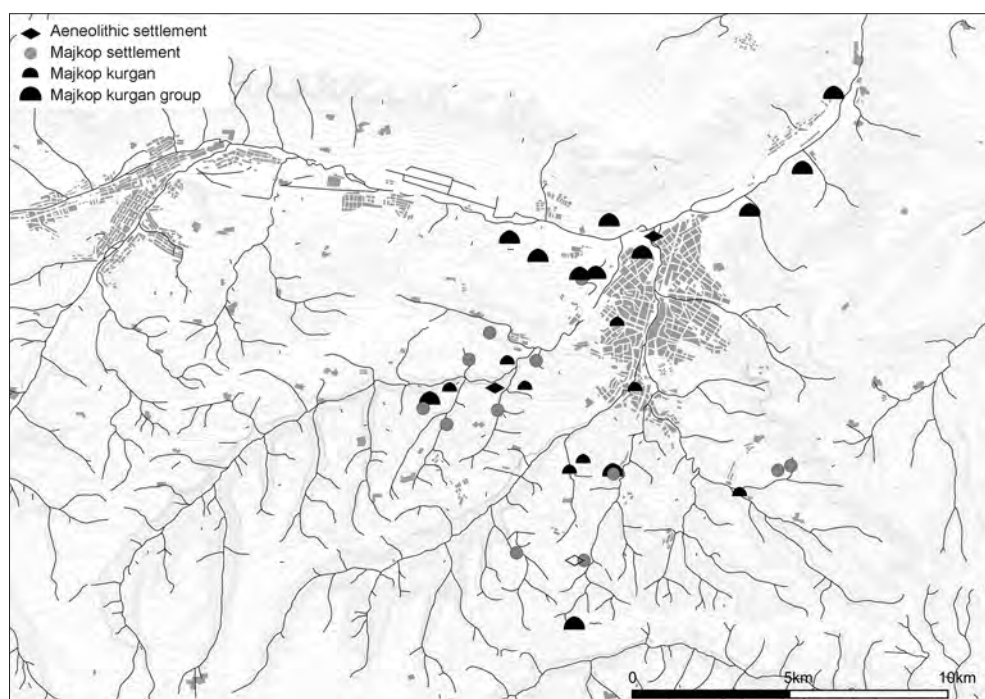


Fig. 8 - Aeneolithic and Early Bronze Age (Majkop Culture) sites.

Fig. 8 - Siti eneolitici e dell'antica età del Bronzo (Cultura Majkop).

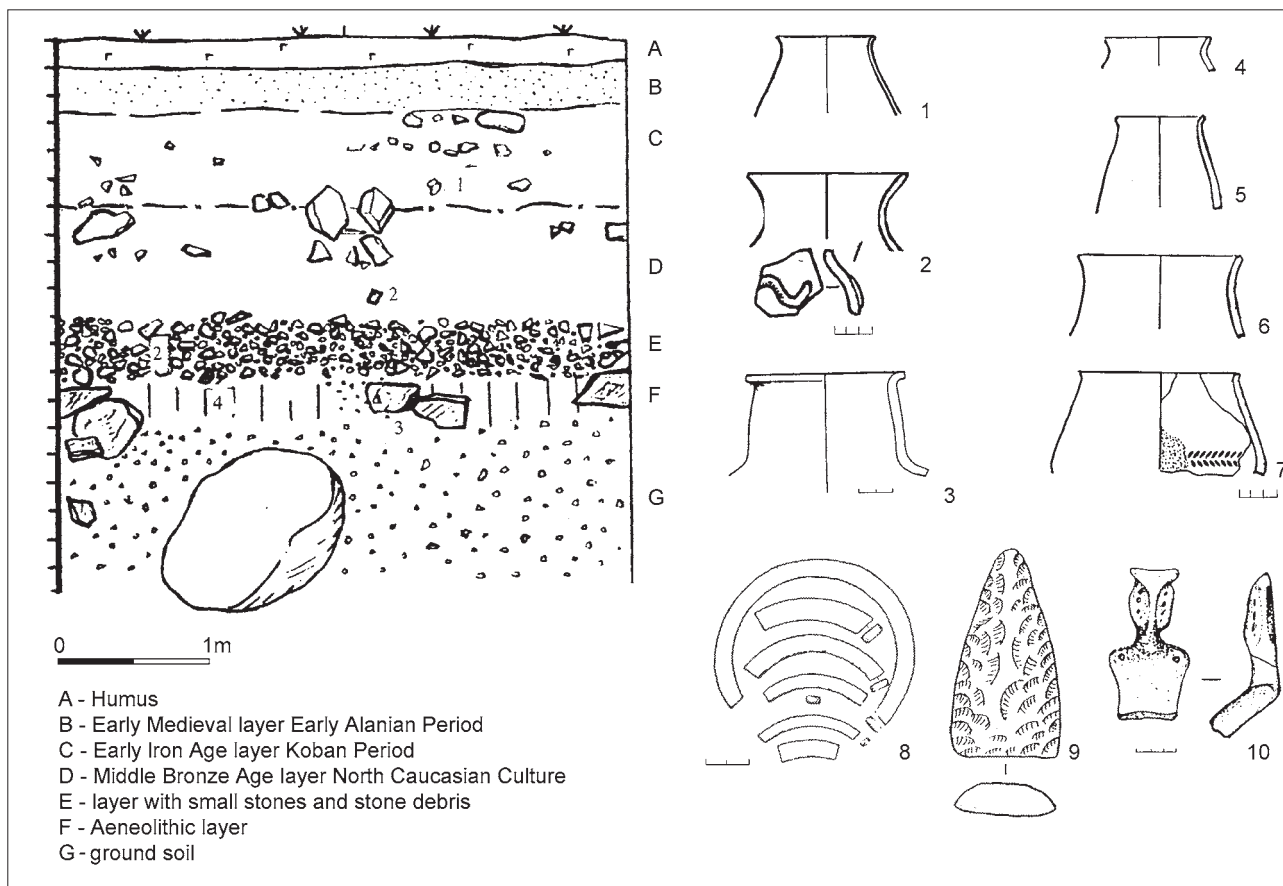


Fig. 9 - The stratigraphy of the site Zamok, which includes layers from the Aeneolithic, Middle Bronze and Iron Age as well as the Early Medieval Alanic period (after Korenevskij 1998, fig. 4); at the right, finds from the Aeneolithic level (after Korenevskij 1998: figs 9, 10, 12).

Fig. 9 - La stratigrafia del sito Zamok, che include livelli dell'Eneolitico, della media età del Bronzo e del Ferro così come del periodo altomedievale alanico (da Korenevskij 1998, fig. 4); a destra, ritrovamenti dai livelli eneolitici (da Korenevskij 1998, figg. 9, 10, 12).

From the archaeological record of the Kislovodsk basin and neighbouring areas the Majkop communities must be considered as the first real farmers in the North Caucasian piedmonts with a sedentary way of life and a mixed subsistence including crop-farming and herding (Korenevskij 1998: 111-113). In the bone spectra cattle and sheep/goat dominate, wild animals and pigs are scarce or missing (*loc. cit.*: tab. 3). The emphasis of substance certainly laid on cattle breeding and farming. In Daghestan even a Majkop origin of the large field terraces is discussed, a fact for which in the Kislovodsk basin as well some hints can be found in the soil studies (Skripnikova 2004: 183). If the Majkop communities, however, already had taken the step to seasonal mountain agriculture is a question still to be answered. The majority of settlements and kurgan groups are situated in an area which is today suitable for crop-farming, and must have been even more favourable during the early Subboreal period in the 4th millennium (Kvavadze & Efremov 1996). Some sites,

like Industrija 1, however, are situated in heights over 1200 m, and could very well have been a basis for summer grazing at the Kabardinka range plateaus.

During the same period bronze metallurgy reached a first climax, and on the southern side of the main Caucasian range sites of the contemporary late Kura Arax culture are found in areas with copper and antimony deposits (Mun aev 1994: 198-213; Lordkipanidze 1991: 50). Thus, one factor for the settling up of the mountain valleys might have been the exploitation and control of the rich ore deposits in the neighbouring area of the upper Podkumok valley and in Svanetia.

The Middle Bronze Age North Caucasian culture (Fig. 10) displays a very different picture. Known predominantly by a huge number of large kurgans (Fig. 11), a real settlement pattern cannot be made out. The burial mounds, however, now cover the whole Kislovodsk area and include the upper courses of the Podkumok tributaries. Most of them are situated on the

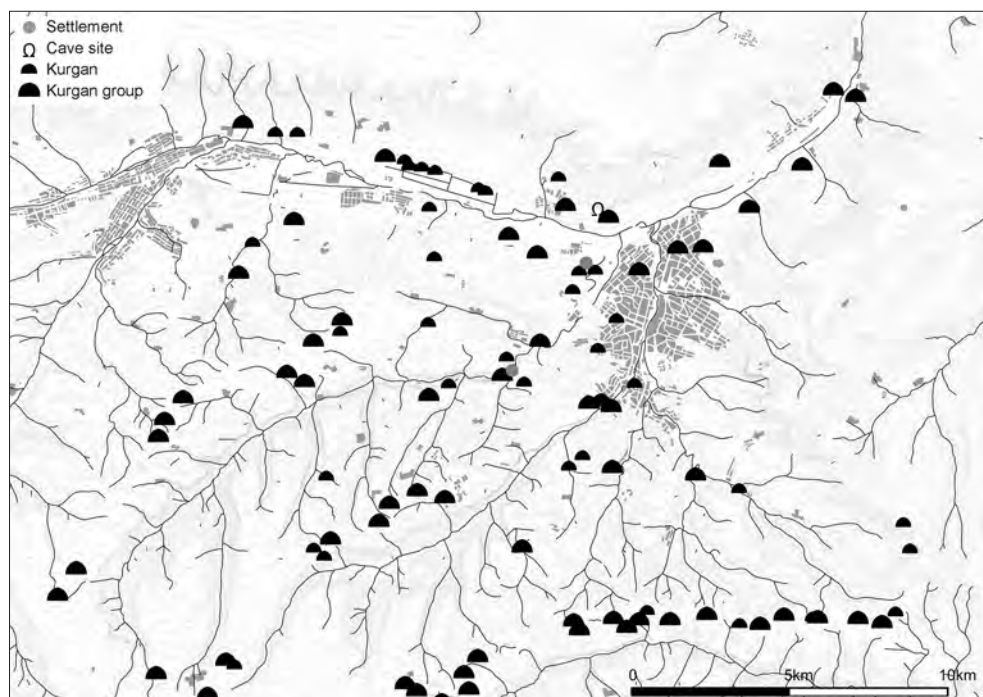


Fig. 10 - Middle Bronze Age (North Caucasian Culture).
 Fig. 10 - Età del Bronzo medio (Cultura nord-caucasica).

watersheds between the rivers or at the plateau edges. Their density is high, but they seem to form some kind of clusters. In any case, the relation of the burial mounds and the major passage routes through the area is obvious. To put the whole territory under the observance of burial mounds, i.e. under the control or protection of the ancestors, seem to have been a guiding principle of these communities. If this means that they practice a more mobile and thus spacious subsistence, or if they firstly settled up also the higher parts of the Kislovodsk area remains open. Settlement sites are very scarce, but exist. The small excavations at the site Zamok (Fig. 9D), however did reveal a cultural level which must be related to a habitation site (Korenevskij 1998: figs 3-4).

From the Late Bronze Age (14th/13th-11th century BC) no sites in the actual Kislovodsk basin are known so far. Between the last chronological stage of the Middle Bronze Age burial mounds (Korenevskij 1991: 108-116, 121) and the classical sites of the Early Iron Age Koban culture (Kozenkova 1989) gape a period of several hundred years, which so far is blank of archaeological complexes. Only at the western periphery, at the boundary of the upper and middle course of the Podkumok and Eshkakon valleys several burial sites and a settlement of this period are known (Bidžev & Kozenkova 1980; V.R. Ėrlich & A.S. Skakov, pers. comm.). Their material culture links them with areas in the central parts of the Caucasus, where this period is better known (Reinhold 2002). Thus, either a total de-



Fig. 11 - Middle Bronze Age kurgan group Verchneolchovskaja 3.
 Fig. 11 - Gruppo di kurgan Verchneol'chovskaja 3 dell'età del Bronzo medio.

population of the lower core area of the region had taken place, or the settlement activities had been such, as to leave no archaeological remains. At the site Zamok Korenevskij (pers. comm.) postulate a continuity from Middle Bronze Age into the following Early Iron Age, but this is not yet proven.

The lack of sites during the Late Bronze Age is even more dubious, considering the density of settlement during the Early Iron Age (10th-8/7th century BC) (Fig. 12). More than 130 sites of this period are known. They form one of the regional variants of the Koban Culture (Kozenkova 1989; Reinhold 2002). Settlements and cemeteries cover the whole of the area with the excep-

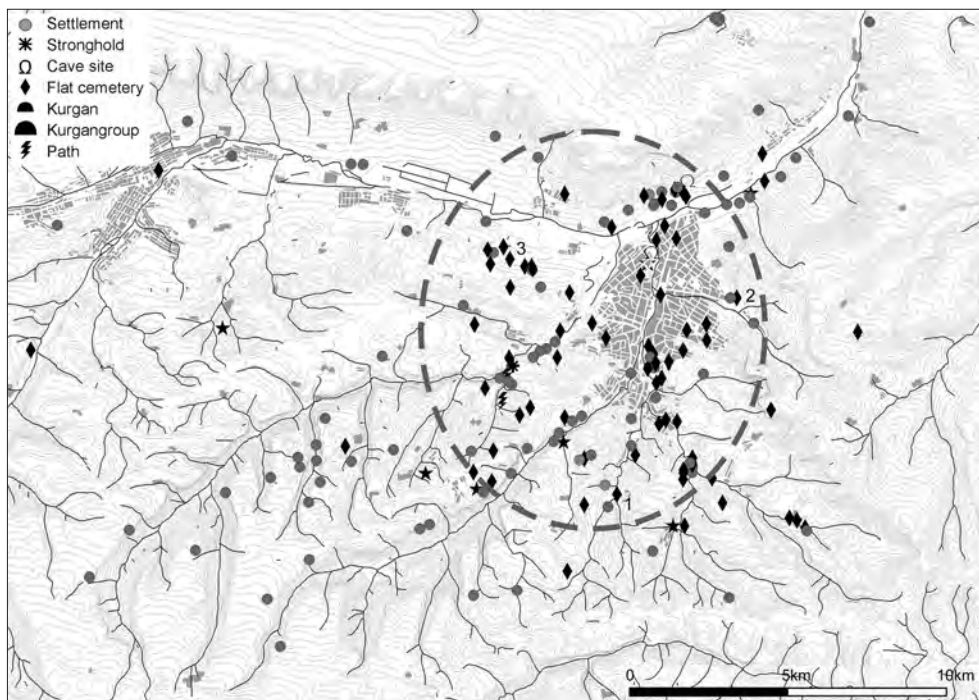


Fig. 12 - Early Iron Age Koban Culture (10th-8/7th century BC). 1= micro-region Industrija; 2= Belorečensij 2; 3= micro-region Klin Yar; circle= area of settlement/cemetery combinations.

Fig. 12 - Cultura di Koban dell'antica età del Ferro (X-VIII-VII secc. a.C.). 1= micro-regione Industrija; 2= Belorečensij 2; 3= micro-regione Klin Yar; cerchio= combinazioni di aree di insediamento/cimiteriali.

tion of the western part between the rivers Alikonovka, Podkumok and Eshkakon. This lacuna seems to reflect a real lack of settlements there, since sites of other periods are known from the survey.

The characteristic Kobanian sites in the lower parts of the valleys involve middle sized or small open settlements with rather large cemeteries. Unfortunately, most excavations in such sites have been undertaken during rescue excavations, e.g. the 50 graves and the settlement of Mebel'naja fabika (Afanas'ev *et al.* 2004: 116, Nr. 127-128) or the sites around the modern hamlet Industrija (Fig. 13). At the cemetery Industrija twenty graves (Fig. 14) dating mainly in the 9th-8th century BC are known from rescue excavations of different years and areas (Afanas'ev & Kozenkova 1981; Berezin & Dudarev 2004; Afanas'ev *et al.* 2004: 136-137, Nr. 282-283). The whole cemetery, however, seems to cover an area of 80x50m, and it is unknown, how much burials are still uncovered. The contemporary settlement likewise is known only from field walking, yet architectural remains are visible on the surface (*loc. cit.*: 137). That the number of burials can be considerably high shows the site of Belorečenskij 2 (Dudarev 2004). Here 29 of the 40 burials were excavated during a regular excavation in an area of 105 square meters. The whole cemetery covers an area of approximately 70x50 m, i.e. 3500 square meters, which allow to predict a number of 960 probable burials, giv-

en a similarly density. The date of the burials ranges from the 9th to 6th-5th century BC. The population thus predicted with all cautions is not very large, 70 or perhaps 100 people living contemporaneously. However, this fits very well to a permanent habitation site with a size around 1ha. There is one exception from this general picture. The site of Klin Yar (Fig. 15), situated at one of the most important strategic points at the interflow of the Alikonovka into the Podkumok River, cover an area of more than 17 ha. Here settlement structures and burials of the Koban, Sarmatian and Alanic period are known. Excavations show that the Kobanian settlements cover at least 10 ha, if not more². The cemetery is similarly large, and more than 350 burials from the 9th to 6th century BC have been excavated (Flërov & Dubovskaja 1993; Härke & Belinskij 2000; Belinskij *et al.* 2001). The settlement seems to have a grid plan with houses along stone paved paths. The buildings are of a considerable size (Fig. 16), are more or less oriented in the same northwest direction and obviously stand close by each other. They have a semi subterranean part and combine dry stonewalls with wattle-and-daub constructions. Altogether, the architecture shows a high technical level, and the presence of thick cultural layers suggests a permanent and long habitation. The presence of a small number of pig bones confirms a sedentary way of life, though the main livestock had been cattle, sheep/goat and horses.

² The settlement material from the Klin Yar excavations is unpublished, but prepared for print by one of the authors (S. Reinhold).

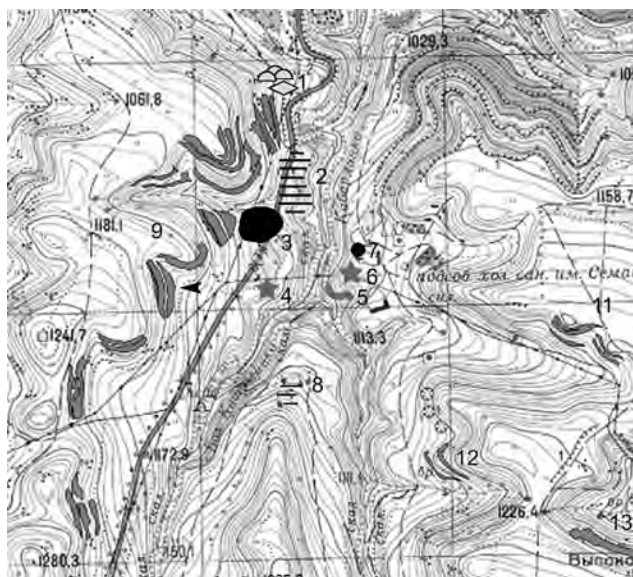


Fig. 13 - The micro-region in the Kabardinka valley. 1= Industrija 1: settlement and burial mounds of the Majkop Culture; 2-3= Industrija 2: settlement and flat cemetery of the Koban Culture; 4= Kabardinskoe 2: fortified stronghold of the Sarmatian and Alanic period; 5-6= Kabardinskoe 1: fortified stronghold and rock chamber tombs of the Alanian period; 7= Semaško: remains of burials of the Koban Culture; 8= Kabardinka 1: remains of a habitation site of the Koban Culture; 9= field terraces on the left bank of the river Kabardinka, some of them with stray-finds from the Koban and Alanian period (arrow); 10-13= field terraces.

Fig. 13 - Micro-regione nella Valle di Kabardinka. 1= Industrija 1: insediamento e tumuli sepolcrali della Cultura di Majkop; 2-3= Industrija 2: insediamento e area cimiteriale della Cultura di Koban; 4= Kabardinskoe 2: fortezza dei periodi sarmatico e alnico; 5-6= Kabardinskoe 1: fortezza e tombe a camera in pietra del periodo alnico; 7= Semaško: resti di sepolture della Cultura di Koban; 9= campi terrazzati sulla riva sinistra del fiume Kabardinka, alcuni dei quali con ritrovamenti sporadici del periodo Koan e alnico (freccia); 10-13= campi terrazzati.

At least in 23 cases a similar combination habitation sites with cultural levels, occasionally also architectural remains, and a cemetery can be identified, mainly dating in the Early Iron Age (10th-8/7th century BC). During the Late Iron Age (7th-5th century BC) the number of cemeteries and settlements drop considerably, a situation comparable to the end of the Middle Bronze Age. For the earlier phase, however, a territory in the central parts of the Kislovodsk basin can be made out (Fig. 12), where presumably permanent settlements had been situated, and the communities buried their dead. The territory is organised in micro-regions (*Siedlungskammern*), which correspond in principal with the major valleys. This spatial structure is also reflected in the material culture, for instance in some aspects of

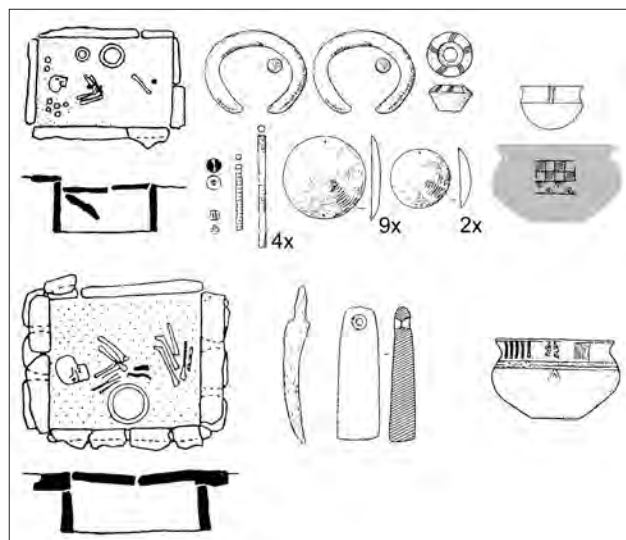


Fig. 14 - Material from the Industrija cemetery of the Koban Culture (after Afanas'ev & Kozenkova 1981, fig. 8).

Fig. 14 - Materiale dal cimitero di Industrija della Cultura Koban (da Afanas'ev & Kozenkova 1981, fig. 8).

the female costumes (Reinhold 2005a), or the ornamentation of ceramic vessels. At first sight, this seems to fit quite well with the model of a mountain settlement structure. Villages with cemeteries in the lower parts, habitation sites without cemeteries in the upper parts of the valleys, which together form an integrated territorial structure, appear reflect indeed one of the above mentioned mountain settlement systems.

In the primordial mountain settlement systems, a considerable variation in size, layout and topography of permanent and non-permanent habitation sites is one of the basic characteristics (Giovanoli 2004). Thus, regularities in the general features should be observable also in the archaeological sites. A more detailed analysis of site topography, size and the heights in which the settlements are located, however, reveal a rather complex structure in the research area. For example, the Koban settlements of the Kislovodsk region do not decrease in size with increasing heights (Fig. 17A). The two largest settlements, Klin Yar 1 with 10-17 ha and Ečkivas 7 with 9 ha, are found in heights at 850 m and respective 1310 m. The remaining sites are rather smaller, most of them less than 1 ha, but they show a rather dispersed structure according to their height. A similar lack of correlation is found in the relation of topography and height (Fig. 17B) or topography and size (Fig. 17C). The classical topography of Kobanian habitation sites is at the edge of a plateau or on the slope below the plateau, on a promontory or a slope in the valley. But only three of these topographic situations seem to be related to height. The terrain limits the locations at slopes in the valleys under 1000 m, since the upper courses

Fig. 15 - Klin Yar. 1, 6, 8= Koban settlements; 2= Koban cemetery; 3, 7= Koban and Alanian burials; 4= Alanian stronghold, star = subterranean house of 2004 (after Härke & Belinskij 2000: fig. 1).
 Fig. 15 - Klin Yar. 1, 6, 8= insediamenti Koban; 2= cimitero Koban; 3, 7= sepolture Koban e alaniche; 4= fortezza alanica; stella= casa seminterrata del 2004 (da Härke & Belinskij 2000: fig. 1).

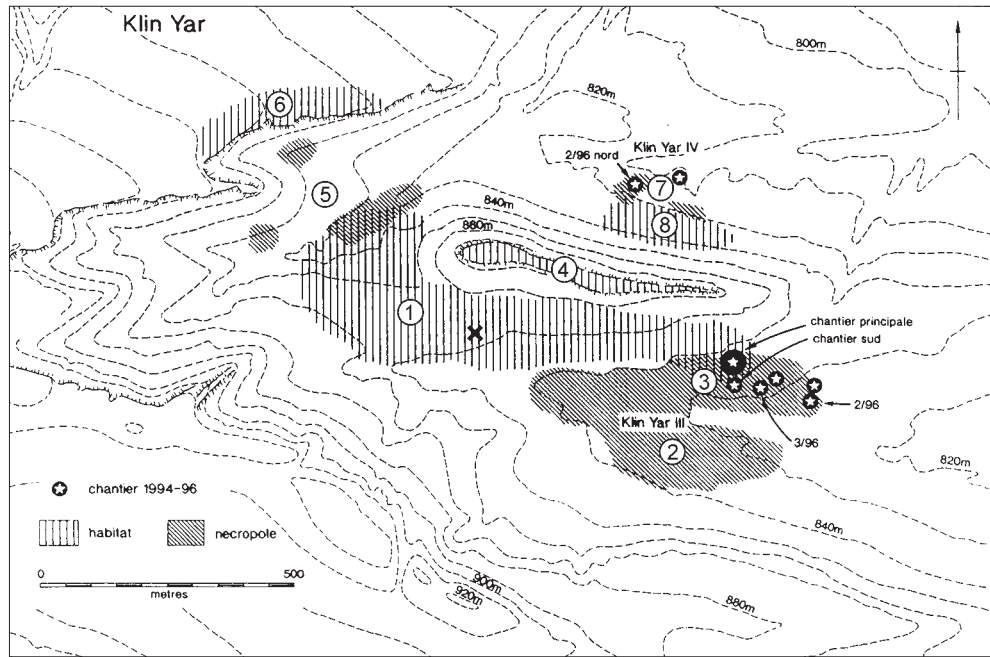


Fig. 16 - Klin Yar. Subterranean house and some of the materials from the cultural layers documented in 2004.
 Fig. 16 - Klin Yar. Casa sotterranea e alcuni dei materiali dai livelli culturali documentati nel 2004.

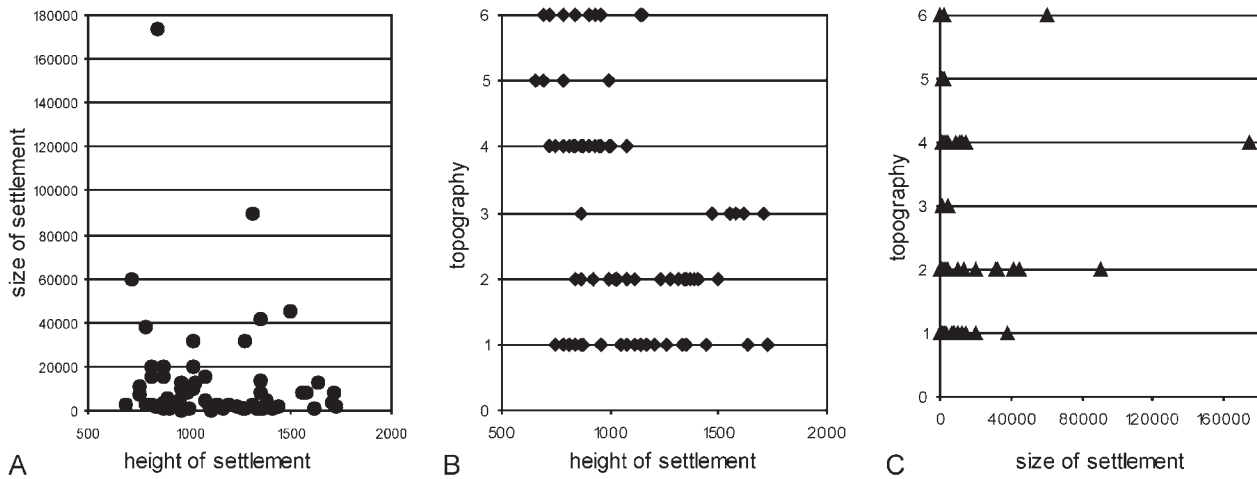
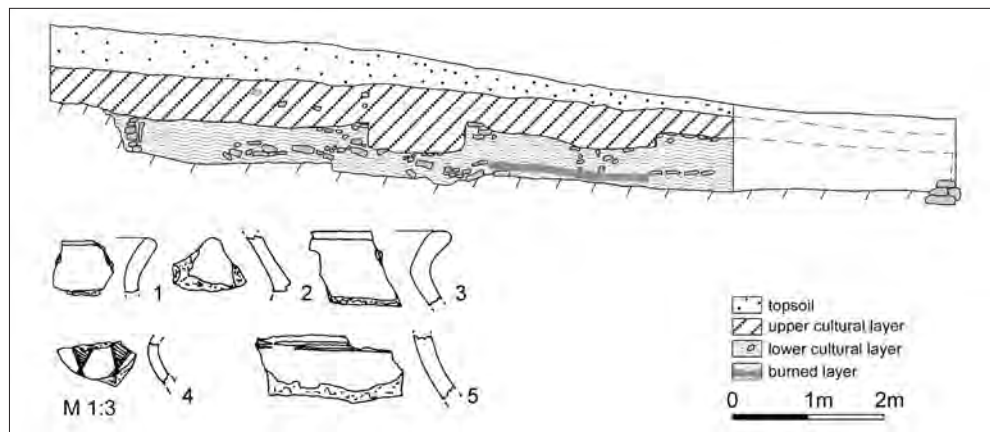


Fig. 17 - Classification of Kobanian settlements according to different topographic criteria.
 Fig. 17 - Classificazione degli insediamenti kobaniani in accordo con diversi criteri topografici.

of the valleys are rather narrow and steep, or covered by peat. The settlements protected by a steep plateau edge, however indeed keep to heights below 1100 m, yet, they belong to all size classes. The settlements at the plateau rims, and those on promontories, are found in all heights and all sizes. And only the sites at the plateaus are limited to heights between 1450 and 1700 m. Since many of the places up to 1400 m have substantial cultural layers, and an abundance of archaeological material (Korobov 2003b), the proposed differentiation of permanent and seasonal sites by topography and size seems not to work. The lack of burials might thus be explained by the lack of modern building activities, which lead to their discovery. Excavations or geophysical recognisance perhaps would localise them also in the vicinity of sites in greater heights. Another possibility is a differentiation of the settlements along other aspects than large communities in the lower villages and a small number of peoples in the seasonal sites, for instance when seasonal activities does not lead to a decentralisation of the communities (for examples see Giovanoli 2004: 28, Abb.).

To identify a potential mountain settlement pattern, thus other factors must be considered. This could be e.g. seasonal patterns in the bone spectra of sites in various heights. The relation between settlements sites and the territories covered by agricultural terraces could be another aspect. Though a GIS analysis in a test area showed a higher level of correspondence between Alanic strongholds and terraces (Korobov 2004), surface material from the terraces around the settlements

of Industrija (Fig. 13/9) date at least them in the Koban as well as in the Alanic epoch (Korobov 2005). Perhaps seasonal sites must be searched anyway in areas higher than 1500 m, above the area that was probably cultivated?

The next chronological period of archaeological remains found in the Kislovodsk basin belongs to the "Sarmatian" period that reflects long and deep contacts between the Caucasian peoples in the mountains and the Sarmatian tribes of the Eurasian steppe. An interesting aspect of the antiquities in the vicinity of Kislovodsk, however, is the absence of sites and finds dating to the Early Sarmatian period (4th-2nd Cents BC). According to the burial data from some sites in the Kislovodsk basin (Fig. 18/1) the main part of the material must be dated in the period from the end of the 2nd century BC to the 4th century AD. Thus, between the last datable sites of the Koban culture and the first remains of the Sarmatian period another hiatus of one- or two hundred years in the settlement of the Kislovodsk basin seems to occur. Yet, some graves of the Sarmatian period are part of cemeteries used in the previous and succeeding chronological periods (Zamkovyj, Klin Yar 3, Machty), some of them formed separate entities dating only to this period (Podkumskij 1 and 2, Aeroftot, Teatraljnij) (Afanas'ev *et al.* 2004, Nr. 26, 55, 57, 158, 159, 258, 797).

When there are already many problems in the dating of the burial data from the cemeteries, the ceramic from strongholds and settlements is even less investigated. Some of these sites were dated intuitively, so their

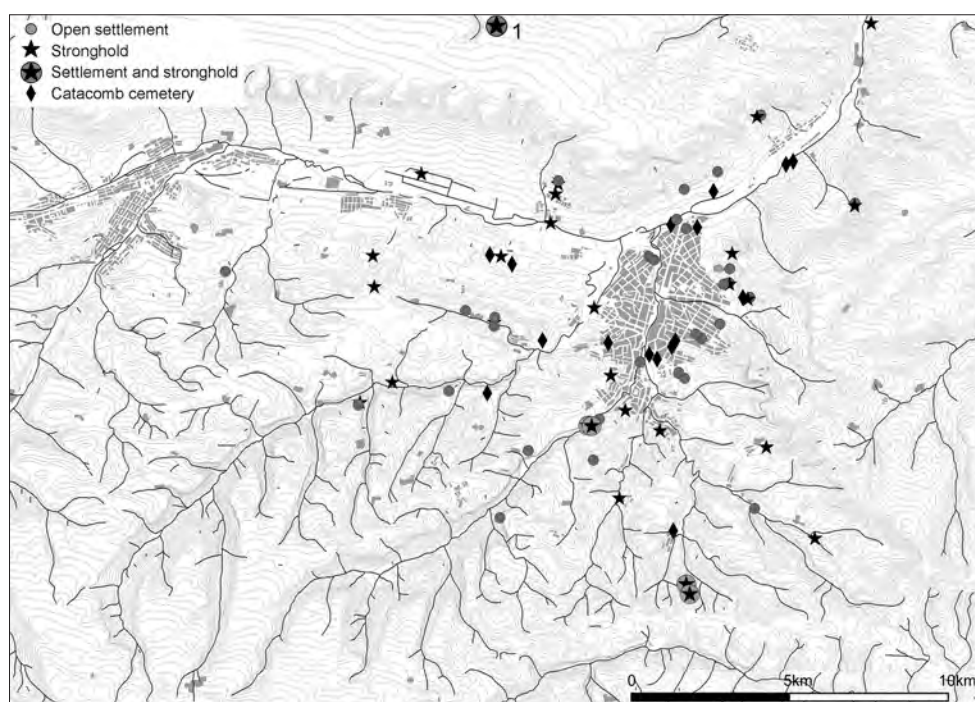


Fig. 18 - Sarmatian period (2nd Cent. BC - 4th Cent. AD). 1= fortified settlement Bourgustanskije Gory 1.

Fig. 18 - Periodo Sarmatico (II sec. a.C. - IV sec. d.C.). 1= insediamento fortificato Bourgustanskije Gory 1.

distribution (Fig. 18) does perhaps not reflect the entire distribution of the inhabited area during the Sarmatian period. There is only one fortified settlement found in 2004 by means of aerial photography (Fig. 19A-B) (Korobov 2005) that undoubtedly belongs to the early phase of the Sarmatian period dating to the 2nd-4th centuries AD (Fig. 19C) – the hillfort Borgoustanskie Gory 1. The other Kislovodsk sites have ceramic materials dated of the Early Medieval period. The localization of the hillfort Borgoustanskie Gory 1 in the central part of the Borgustan Range is remarkable. This location forms the border between the North Caucasian steppe and the piedmont zone of the Kislovodsk basin. This links it closely to Early Alanic hillforts that occupied the huge territories of the Ciscaucasian steppes before the Hunnic invasion in these parts of the North Caucasus in 2nd-4th centuries AD (Arzhantseva *et al.* 2000: fig. 1).

Another characteristic pattern in the settlement structure during the Sarmatian period is the distribution of the sites in the center of the basin. It is possible that this picture is influenced highly by data obtained during rescue excavations on the territory of the town Kislovodsk. But the area covered by the previous (Kobanian) and following (Alanic) cemeteries is much larger. So this concentration of the Sarmatian sites in the center could indeed reflect the first stage of the establishment of Iranian tribes as the Sarmatians and later the Alans in this area.

The Early Alanic period in the Kislovodsk basin (4th-8th Cents AD) has left the largest number of archaeological traces there. The density of the archaeological sites reached its maximum during this epoch (Fig. 20). Generally the cemetery material from the most catacomb graves (Fig. 21) date to the period of the second half of 5th to the first half of 8th century AD. There are several burials, which date a little earlier or later, but they do not form the general tendency.

During the Early Medieval period principally an Alanic population inhabited the Kislovodsk basin, possibly the Ash-Tigors of the medieval written sources (Zuckerman 2000). The catacomb burials of the earlier phases are usually attributed to these Alanic tribes. During the second half of the 8th century AD, however, this characteristic burial rite disappears and a new type of cemeteries in rocky niches appeared. As it seems now, their distribution started from the Chasaut and Eshkakon valleys some 20 km south and west of Kislovodsk where the earliest complexes date to the second half of 6th-7th centuries AD (Afanas'ev *et al.* 2004: 53). It is possible, that the change in burial traditions, i.e. the custom of burying the deceased in the rocky niches, reflect the rites of other communities or an-



Fig. 19 - Fortified settlement Borgoustanskie Gory 1. A= aerial photo; B= view to S; C= ceramic found on the surface.

Fig. 19 - Insediamento fortificato Borgoustanskie Gory 1. A= fotografia aerea; B= vista verso sud; C= ritrovamento ceramico di superficie.

other population, in this case the ancient Turcic tribes of the Bulgars or Chazars (Kouznetsov & Lebedinsky 1997: 72). When this interpretation is correct, the change in burials seem to reflect a change of at least some of the population.

That some parts or the whole Alanic population from the Kislovodsk basin together with other Caucasian Al-

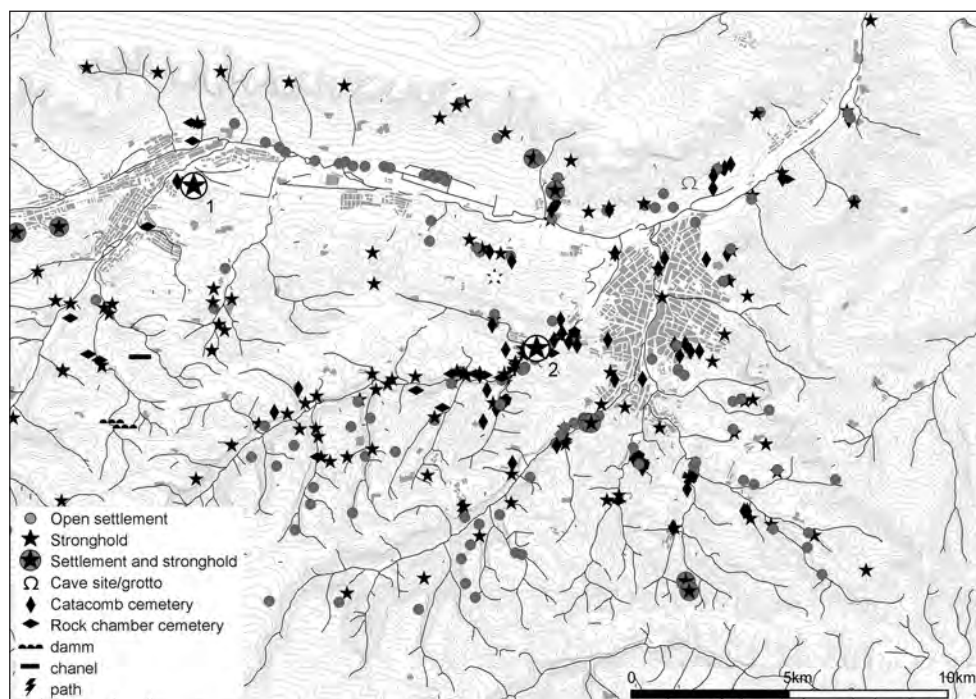


Fig. 20 - Early Alanic period (5th-8th Cents. AD). 1= settlement and stronghold Rim-Gora; 2= settlement and stronghold Gorny Ècho.

Fig. 20 - Periodo alamico (V-VIII secc. d.C.). 1= insediamento e fortezza di Rim-Gora; 2= insediamento e fortezza di Gorny Ècho.

ans, during the 8th century AD moved from the Central Caucasus to the Middle Don basin where they are found on the borders of the Chazar's kaganate (*loc. cit.*: 72). It seems that some of the new communities could be formed by population from the Kislovodsk basin. Thus, a comparative analysis of catacomb burial characteristics in different regions has shown that only the catacombs from the Kislovodsk basin have such similarities like special pits in the floor of the chamber under the entrance, as were found in burial chambers of some cemeteries belonging to the Saltovo/Maiaki culture in the Middle Don region (Korobov 2003a: 98-99).

From the perspective of settlements, the evidence of this period is much more complicated. As it was stressed above there is no reliable chronology for the Early Medieval settlement data, the Alanic strongholds and open settlements are no exclusions. Like in the Kobanian period there are a considerable number of places where cemeteries and strongholds are combined, but most of them are concentrated on the territory of the town and its nearest vicinity. Like in the case of the mentioned Koban sites catacomb cemeteries outside of modern Kislovodsk are less frequent, which is possibly also caused by a lower building activity there. But in general it seems that the existence of the strongholds corresponds with the cemeteries – the largest quantity of finds can be dated in the 5th to 8th centuries AD. This date is supported by the fact that the ceramic tradition dramatically changes in following period, and by the metal finds that are not rare among the surface material of the Alanic sites (Fig. 22).

The 125 Early Medieval strongholds can topographically be attributed to three groups. The first unite 105 strongholds, which are situated on the edges of plateaus, often on promontories, and which occupy the territory of the canyon like valleys from 700 to 1530 m heights. The geological shape of the canyon like valleys with their high vertical borders form an excellent natural defense that is usually further improved with artificial stone constructions, sometimes of very good preservation (Fig. 23A). The size of this type of fortified settlements is rather small, and usually does not exceed 0.5 ha.

At the surface of these sites along the canyons remains of stone architecture, a lot of ceramic material and even metal objects are found. Test trenches made in some of them uncovered numerous ceramic fragments, but also animal bones. The first analysis of the bone material and the presence of cereals in these sites, allow to predict a mixed farming agriculture as the subsistence of the inhabitants. The most number of these settlements furthermore are situated below 1400 m in the zone which is covered by field-terraces. This arguments combined allow to interpret the first type of the Alanic fortified settlements as habitation sites, but of rather small populations – possibly three or four small families or one large family.

The second type of fortified settlements sites is situated on the top of the remnant sandstone hills. There are only four such settlements in the Kislovodsk basin, and all of them are outstanding because of their size and the finds in the cemeteries around. These settlements have large dimensions from 1 to 10 ha, a comparative low

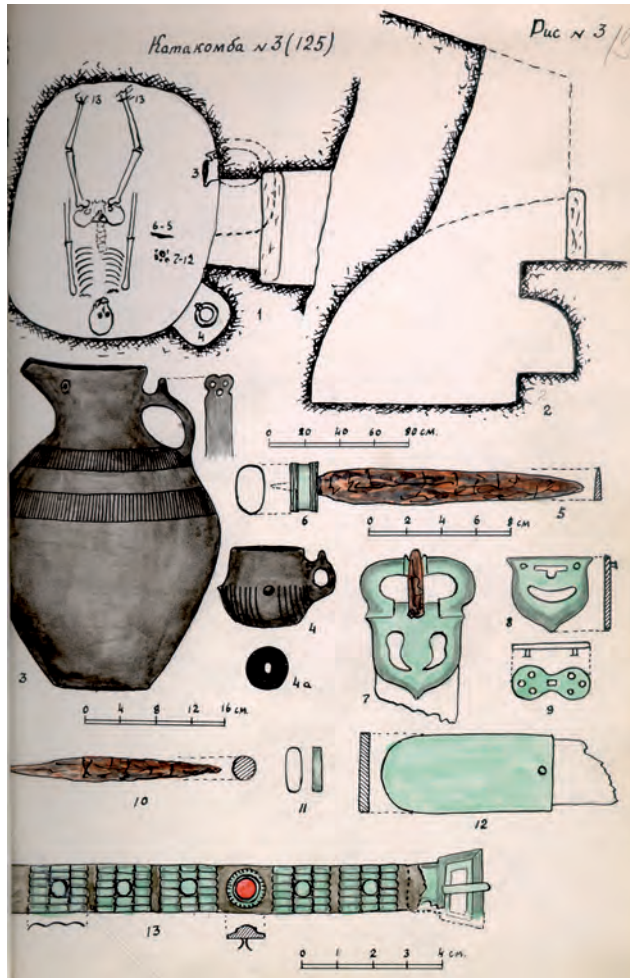


Fig. 21 - Typical catacomb burial from Mokraja Balka 1, excavated by A.P. Runič in 1975. (after Afanas'ev/Runič 2001: 229, figs 154-155).

Fig. 21 - Tipica sepoltura a catacomba da Mokraja Balka 1, scavata da A.P. Runič nel 1975. (da Afanas'ev/Runič 2001: 229, figg. 154-155).

height of 800-1000 m, fortified borders, and stone architecture visible on the surface. Large cemeteries that include graves or grave groups, which must be attributed to persons of a high social rank accompany them habitually. At least two of them seemed to be central places, Gornj Écho in the center of the Kislovodsk basin during the Early Alanic period, and Rim-Gora at its western fringe during the Late Alanic period (Fig. 23B).

The third type of strongholds includes settlements without stone fortification, but with an artificial alteration of the terrain, mostly in form of small ditches. They are like small forts situated on the top of hills on heights of 900 to 1300 m. Most of them – 10 of 16 – were found at the Borgustan Range in the field season 2000 and 2004. The small sizes of these sites around 0.3-0.5 ha, few surface finds, the absence of stone fortifications or architecture in combination with an excel-

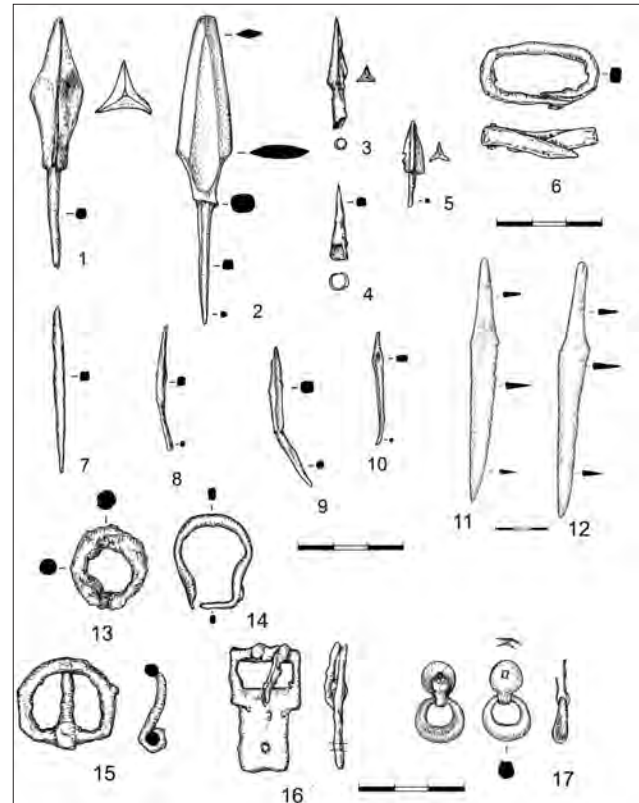


Fig. 22 - Metal finds of Early Alanic period from the stronghold of Mosejkin Mys 1 (2, 6, 11, 12) and the settlement of Mosejkin Mys 3 (1, 3-5, 7-10, 13-17) (after Korobov 2001: fig. 48-50). 1-5, 8-10= iron arrow heads; 6= iron ring; 7= iron awl; 11-12= iron knives; 13-16= iron belt buckles; 17= silver belt fitting.

Fig. 22 - Ritrovamenti metallici del periodo alamico antico dalla fortezza di Mosejkin Mys 1 (2, 6, 11, 12) e dall'insediamento di Mosejkin Mys 3 (1, 3-5, 7-10, 13-17) (da Korobov 2001: figg. 48-50). 1-5, 8-10= punte di freccia in ferro; 6= anello in ferro; 7= punteruolo in ferro; 11-12= coltelli in ferro; 13-16= fibbia di cintura in ferro; 17= elemento decorativo di cintura in argento.

lent vista lead to an interpretation as watchtowers. To prove this interpretation, a GIS analysis of the viewshed and lines of sight was developed in 2004. The first virtual reconstruction of the Early Medieval signal system suggested the necessity of roughly ten such signal posts to dispatch the information to all Alanic strongholds when an enemy is advancing from the east. When enemies came from the west, only five such posts were needed in the line of information. During the field season of 2004 we tried to prove this reconstruction and organized an experiment with smoke signals using four hypothetical watchtowers (Fig. 24A,B). The signals were visible about distances of 4 to 9 km. The total distance covered by the experiment was around 18 km. It took about 15 minutes for our "information" to be transferred from the central to the eastern part of the Borgustan Range, which means, that it could have



Fig. 23 - Types of Alanic fortified settlements. A= type 1, stronghold Zubčichinskoe 1, view to N; B= type 2, hillfort Rim-Gora, view to SSE.

Fig. 23 - Tipologie di insediamenti fortificati alanici. A= tipo 1, fortezza di Zubčichinskoe 1, vista verso nord; B= tipo 2, castelliere di Rim-Gora, vista verso SSE.

been seen by at least half of the hypothetical Early Medieval population in the Kislovodsk basin.

There is a last type of Alanic sites, which is classified as open settlements. They are usually situated on slopes near fortified sites. It is very difficult to decide about their function. They could reflect habitation sites as well, or are traces of an agricultural occupation.

The first analysis of the settlements shows the high level of territorial organization during the Alanic period. The large number of comparatively small settlement sites suggests a dispersed organization of the population, however, with centers of power at one or a few places in the lower parts of the basin.

The gap between the Early and the Late Alanic period is filled by some of the cemeteries in rocky niches

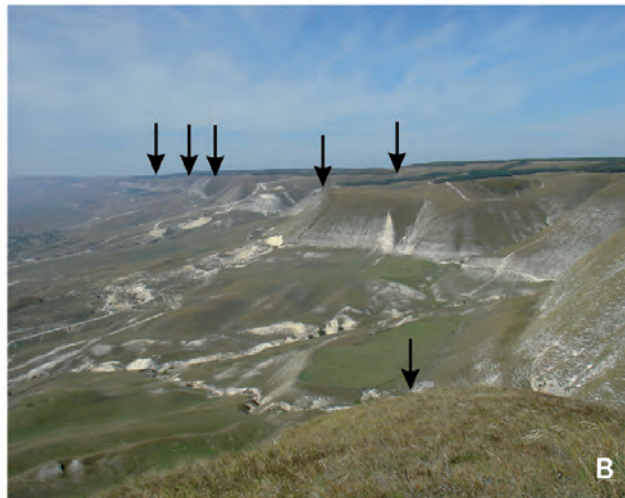


Fig. 24 - Types of Alanic fortified settlements. A= watchtower Borgoustanskoe 9, view to N, experiment on the transportation of smoke signal; B= view to W from watchtower Borgoustanskoe 9 to other watchtowers situated on the Borgoustanskij Range.

Fig. 24 - Tipi di insediamenti fortificati alanici. A= torre di avvistamento di Borgoustanskoe 9, vista verso nord, esperimento sul trasporto dei segnali di fumo; B= vista verso ovest dalla torre di avvistamento di Borgoustanskoe 9 verso altre torri di avvistamento situate nel territorio di Borgoustanskij.

(see above). Possibly, a new wave of the Alanic tribes returned to the Kislovodsk basin in 10th century AD, which is reflected in the re-establishment of catacomb burials (Fig. 25) at few cemeteries. An interesting difference to the previous Alanic occupation of the territory is the concentration of the sites dating to the 10th to 12th centuries AD at three or four centers – Rim-Gora, Mebelnaja Fabrika, Leschoz, Kolco-Gora. Here large settlements and fortified places, as well as a huge number of catacomb cemeteries were found (Fig. 26). It is remarkable that all these sites are situated on the main river valley of Podkumok, i.e. the major communication

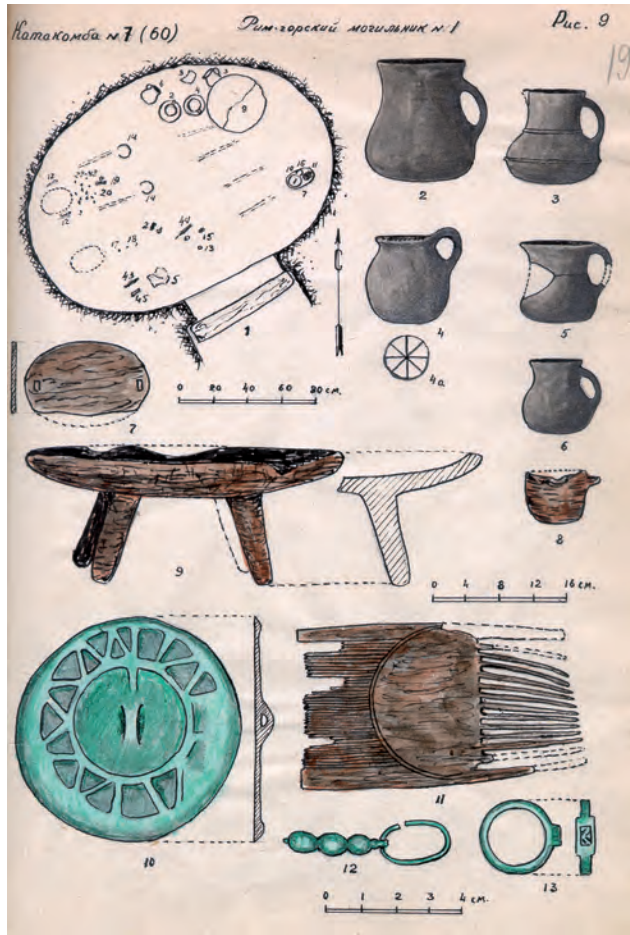


Fig. 25 - Typical Alanic catacomb burial of 10th-12th Cents. AD, excavated by A.P. Runič in 1972 (Runič 1972, fig. 9).
 Fig. 25 - Tipica sepoltura a catacomba alantica dei secoli X-XII a.C., scavata da A.P. Runič nel 1972 (Runič 1972, fig. 9).

route through the Kislovodsk basin. This concentration of settlements reflects a new period in the Alanic occupation of this area – the formation period of the state “Alania” (Kouznetsov & Lebedinsky 1997: 79-80).

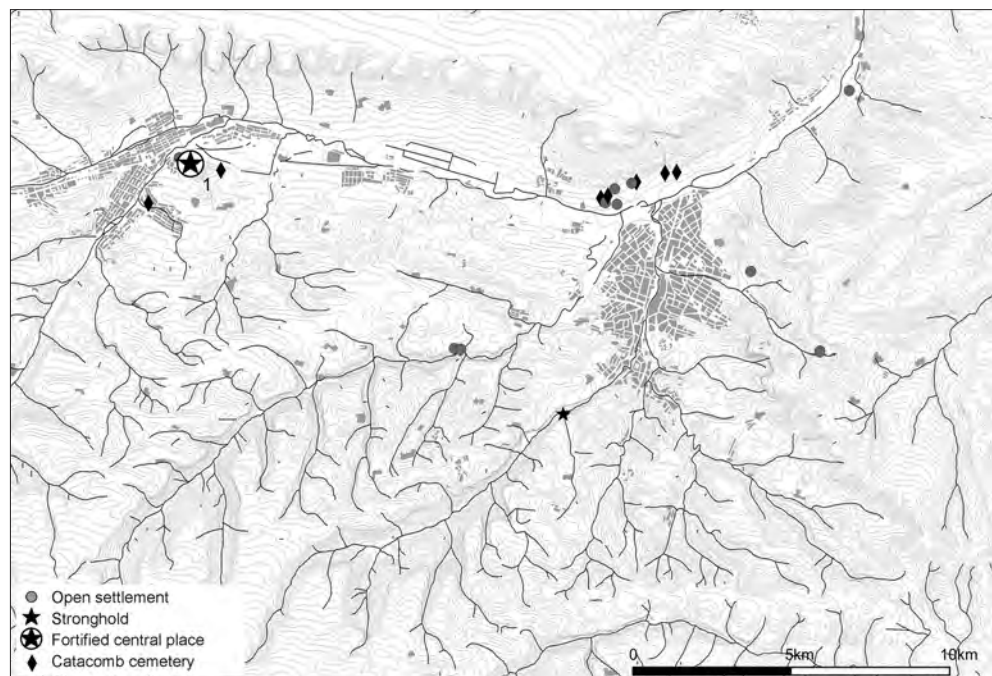
The Mongolian invasion in 13th Cent. ended the development of Alanic society and erased all traces of their population in the Kislovodsk basin. After this, during 14th-17th centuries AD, the territory fell relative waste, as only few so-called “Kabardian” barrow cemeteries can be dated in this period. The same situation continued practically until the Russian colonization, and the erection of the Kislovodsk fortress in 1803. Some pastoral corrals found in the upper parts of the Alikonovka, Berezovaja and Kabardinka rivers perhaps belong to this period, but they cannot be precisely dated. Possibly they date to the 18th/19th or the beginning of 20th centuries, and were build by seasonal shepards of the Karachaj population.

5. FURTHER RESEARCH

5.1. Remote sensing and GIS – The discovery of a new typ of settlements at the fringe of the Kislovodsk basin

The initial analysis of the settlements of the Early Iron Age Koban culture by their topography, as shown above, had not provided real arguments to reconstruct a mountain settlement structure. During the field season 2004, however, a new type of settlement sites from this period was discovered, that in future possibly could

Fig. 26 - Late Alanic period (10th-12th Cents. AD). 1= settlement and stronghold Rim-Gora.
 Fig. 26 - Periodo alamico tardo (X-XII secoli a.C.). 1= insediamento e fortezza di Rim-Gora.



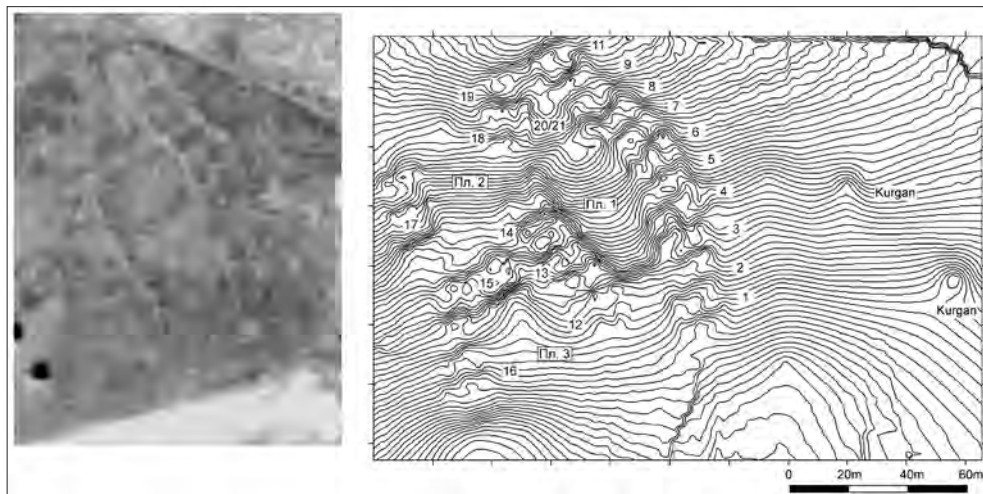


Fig. 27 - Settlement with symmetric layout Kabardinka 2, aerial photo and micro-topographic plan of 2004.

Fig. 27 - L'insediamento con pianta simmetrica di Kabardinka 2, fotografia aerea e pianta micro-topografica del 2004.

verify such a system. First on the ground, and later on aerial photos settlements with a symmetric layout including a central place accompanied by a row of houses on the major sides (Fig. 27) were found (Korobov & Reinhold 2005a, 2005b; Reinhold 2005c). All of them are localised south of Kislovodsk on non-wooded plateaus in heights between 1400 m and 2000 m. Field examination of these settlements allowed to link their visibility on the aerial photos to the existence of debris from stone walls. These today are covered by vegetation, but leave elevation differences of 0,5-0,8 m to the general surrounding. The central places furthermore seem to have been artificially lowered, since in several sites a decided step from outside to inside is noticeable. On aerial photos of the neighbouring region taken in spring this settlements are even better visible than on those of the Kislovodsk area, which were taken in autumn. On this images the stone construction of the walls is visible even in details (Fig. 28). More than 70 settlements and a number of other structures have been discovered so far at the western and southern periphery of the Kislovodsk basin. They share not only a similar symmetric layout, but also a similar topographic position on the edge of the plateaus near springs or small valleys, and are restricted to an ecologic niche, the flat plateaus between the Kislovodsk basin and the main Caucasian range with heights between 1400 m and 2000 m. During the 2004 field season we visited ten of these settlements and all of them could be dated by their surface finds in the Late Bronze/Early Iron Age, i.e. the Koban period. This, and the similarity in topography and layout make it very likely, that they more or less belong to the same cultural period.

The function of these sites, yet, is still an open question. Their size around 1 ha is considerably large, two-roomed solidly build houses with sizes of 15x10 m, the presence of cultural layer up to 0,80 m, the exi-

stence of a dump area and other aspects seem to correspond rather with a permanent habitation, than with a seasonal herding settlement. The central places, on the other hand, are well known from such sites in the ethnographic record. Surprisingly, however, phosphate samples taken at the places and houses at the site Kabardinka 2 revealed very low phosphate quantities at the central place, which does not correspond with a



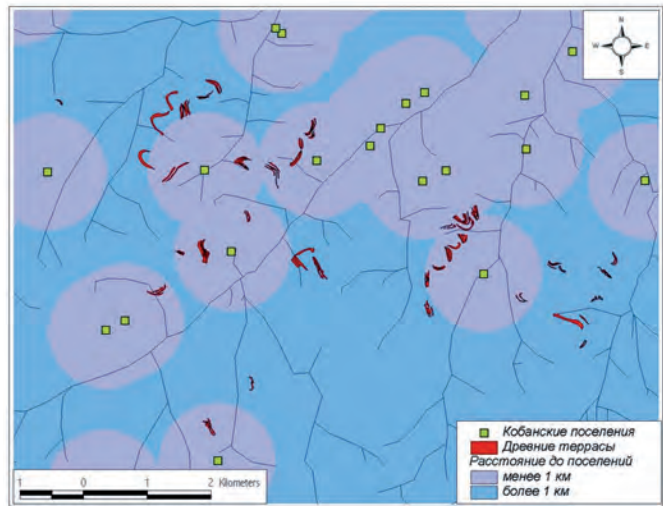
Fig. 28 - Settlement with symmetric layout near Karsunka River from an aerial photo taken in spring.

Fig. 28 - Insediamento con tracciato simmetrico vicino al Fiume Karsunka da una fotografia aerea scattata in primavera.

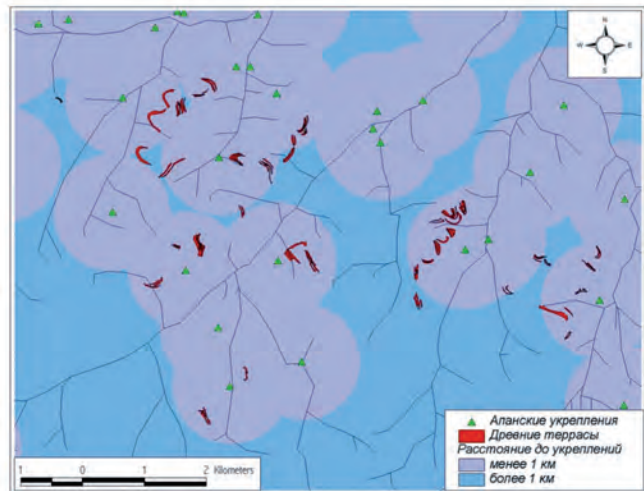
usage for keeping livestock. The questions initiated by the discovery of this new type of sites are considerable, and it is obvious their function can only be clarified by further investigations including excavations, environmental studies and seasonality analysis.

5.2. Remote sensing and GIS – agricultural terraces

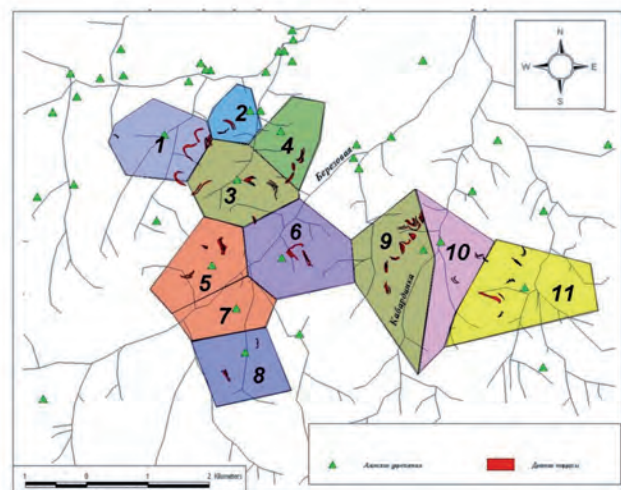
As mentioned several times above, the Kislovodsk area is scattered by a large number of ancient field terraces. During the archaeological survey we repeatedly paid attention to this traces of a terraced agriculture, since they are perfectly visible in the landscape. Their systematical investigation started in 1997 (Turova *et al.* 2001). In 2001 a first GIS based analysis of this sites was started in a test area between the rivers Berezovaya and Kabardinka (Korobov 2003c; 2004). The terraces visible on the aerial photos were mapped using ArcView 3.1 and ER Mapper 5.5. As a result, 115 terraces with a total size of more than 40 hectares were plotted on aerial photographs as polygonal vector layer. Then, spatial analysis were used trying to find the logic of their distribution. At first the spatial distribution of terraces and 16 Kobanian settlements, 6 Sarmation strongholds and 22 Early Medieval strongholds were compared. A one-kilometer zones around the Kobanian sites showed 65 terraces out of 115, i.e. a total of 20 hectares, in this zone (Fig. 29A). Thus, we can explain only 50% of the terrace-fields by proximity to Early Iron Age settlements. The same map made around the strongholds of the Sarmatian period demonstrates an even larger distance of the terraces from the hypothetical centres of the people who worked on them. The best correlation between terraced slopes and archaeological sites is found on the map with the one-kilometer zone around the Early Medieval strongholds. Of the 115 terraces only 6 are situated outside this zone (Fig. 29B). Thus, the analysis demonstrates the closes spatial connection of terrace-fields with the Alanic strongholds, even there is the possibility of non-si-



A



B



C

Fig. 29 - Results of GIS analysis of the distribution of agricultural terraces. A= distribution of the one kilometer zones around the Kobanian settlements; B= distribution of the one kilometer zones around the Early Alanic strongholds; C= Thiessen tessellation of the Early Alanic strongholds.

Fig. 29 - Risultati delle analisi GIS della distribuzione dei terrazzi agricoli. A= distribuzione di aree con raggio di 1 km attorno agli insediamenti kobaniani; B= distribuzione di aree con raggio di 1 km attorno alle fortezze del periodo alanico antico; C= poligoni di Thiessen delle fortezze del primo periodo alanico.

multaneous origin of the different terraced slopes, or their usage in several periods.

The next step of this preliminary analysis was the creation of hypothetical economic zones around Early Medieval strongholds using Thiessen tessellation. According to the results of this analysis, the areas field terraces are precisely located inside the boundaries of the constructed Thiessen polygons (Fig. 29C). Practically no terraces are found outside, and some strongholds seem to form centres, around of which terraced fields are placed.

Using an average grain consumption of 250-300 kg per year/person, which is suggested by the ethnographic data of the North Caucasus, and ethnographic information about the productivity of grain cultures (barely and corn), it is possible with great care to calculate the amount of the population, which could be fed by the surrounding cropland on field terraces. The obtained results of the calculation show that between 5 to 40 people could live simultaneously on a stronghold, when fed only by the crops of the area of terraced agriculture in its vicinity. Certainly many open aspects are part of this hypothesis: the diet of the population is unknown, as well the grain cultures and their real productivity, the system of land-utilization, the other forms of agriculture etc. Thus, this calculation of a hypothetical population is no more than one of the ways of demographic simulation and which is not claiming for a final decision.

This output, however, confirm the above-mentioned assumption about the Alanic strongholds as habitation sites of only one large or one to five small families. It confirms also the special research of the Alanic burial rites made by one of the authors (Korobov 2003a: 136-161) about rather small family unities according to the burial data. The offered technique of mapping the ancient traces of the terraced agriculture will be developed and combined with the other methods of environmental analysis.

5.3. *Environment analysis – ecological background and modelling of cultural landscapes*

Predictive modelling of bio production was also developing in the Kislovodsk basin by means of GIS-analysis. With this aim a special climatic module was made with the modern environmental characteristics for every cell of the basin of 500x500 m. The first results obtained during the modulating of the climate changes has already published (Afanas'ev *et al.* 2002: 74-75; Afanas'ev *et al.* 2004: 78-88). **An reconstruction of the areas of different bio-production for the Early Medieval period is forthcoming (Afanas'ev & Korobov 2005).**

Further environmental research will include soil studies and phytolith analysis on different types of field terraces. This will perhaps help to clarify the phases of their usage and even provide information about the crops cultivated. Samples taken in 2001 at the Alanic site of Kabardinka 2 and Pravobereozovskoe 4 revealed not only cereal pollen, but also several field weeds (*Ackerunkräuter*), which suggest fields in the vicinity of these sites. During the 2004 field research botanic macro-rests were sampled at several sites and gave first evidence for *Triticum dicoccum*, *Hordeum vulgare* and *Panicum miliaceum* as crops used during the Koban period, while the cultural layers of the Alanic stronghold Pravobereozovskoe 5 contained seeds of *Triticum aestivum* and *Secale cereale*. This site at 1522 m is one of the highest Early Medieval settlements, situated far above the next field terraces.

5.4. *Diachronic social analysis of burials – the social setting of different periods*

To link the spatial analysis of our research with the results of social analysis based on the rich material from cemeteries might become one of the most interesting aspects in our future studies. At the moment it is already obvious that the two major phases of population, the Early Iron Age Koban and the Early Medieval Alanic period, display very different settlements patterns: on one side middle sized sites around 0,8-2 ha almost always open and only slightly protected by the terrain, on the other a large number of very small sites, situated on promontories, mostly fortified and obviously with a defensive architecture; on one hand a settlement system with sites from 800 m up to 1700 or 2000 m, on the other a restriction in heights below 1500 m. The Alanic territorial structure, furthermore, indicates a settlement hierarchy with central places like Gorny Ècho or Rim-Gora, between which an organised communication was enabled by signal posts. Even also the Koban period has some really large sites, like Klin Yar, a real settlement hierarchy is not evident.

The social analysis of the burial evidence of both periods reveals differences in a very similar way. For the Koban period a strongly formalised and horizontally organised social structure can be reconstructed (Reinhold 2005a, 2005b). An established elite, which could be part of a centralised “political” body, is missing. These communities form rather small, independent entities from the perspective of material culture. They very closely resemble the so-called “Homeric society”, a social stage at the transition from a segmented organisation to a hierarchically society (*loc. cit.*). Especially the warrior burials reveal a sophisticated ranking,

and outstanding burial equipments undeniably mark leading individuals. However, not evidence for a real transformation into a hierarchic pre-state society can be found. Neither rich child burial that would indicate the inheritance of status, nor real status symbols and other features of a centralised power are present.

During the Alanic period at first view the same situation can be stated. On the basis of the cemetery evidence, it is possible to suggest more or less a social uniformity of the Alanic population during the 4th-9th centuries AD. The adult males as a whole probably made up the tribal army (Ossetian term "afsad"). At the same time, however, the formation of a rank of noble military leaders ("aldar") is discernible. They are represented in very rich burials from cemeteries like Klin-Yar, Lermontovskaya Skala and Mokraya Balka (Korobov 2003a, 258-259). At the Klin-Yar 3 cemetery even an elite plot was identified by the excavators (Härke & Belinsky 2000: 209). This formation of social elite was perhaps the result of a more developed social structure of a population, which was situated near a branch of the Great Silk Road. It is very interesting to note that the fortified settlement of Klin Yar belong to settlements on the remnants that possibly were centers of power. The other site of the same type – the fortified site of Kugul'skoe – was likewise accompanied by different type of the burials in stone tombs with the extra ordinate wealth of grave goods (Afanas'ev *et al.* 2004: 103-104, Nr. 43-45). The social differentiation of the female individuals is hard to infer according to the grave good sets. There is no also simple relationship between their status and the status of males in the same double burials (Korobov 2003a: 257-258).

There is no doubt about the high social status of the individuals in some graves. They had an exceptional set of grave-goods, large grave construction, stone walls marking the dromos on the surface in Mokraya Balka 1 and, finally, the presence of gold belt fittings and coins. Several scholars put these wealthiest burials on one level with other graves of so-called "military chiefs", that possibly show us the first stage of the formation of the pre-state society (Korobov 2003a: 287-289).

6. SUMMARY

To sum up, the long tradition of archaeological research in the Kislovodsk basin allow to start very detailed analysis of human settlements and territorial structures. The diachronic perspective reveal also at this stage of research differences, but as well correspondences in the different chronological periods. During several

phases this area was not only very intensively used, but also connected to the larger communication systems of Eurasia. Further research can now be directed onto particular problems – the relationship of humans and environment, the influence of climate, the social formation of a landscape and many more.

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