

Sinop Regional Archaeological Project: Report on the 2010 and 2011 Field Seasons

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The Sinop Regional Archaeological Project (SRAP) is a systematic investigation of multi-period cultural, economic and demographic processes in the Sinop promontory through archaeological survey, geomorphological and paleoclimatic studies, geophysical survey, and analysis of ceramic evidence obtained from surface surveys. The present report covers the 2010 and 2011 field seasons (Figure 1).²

In 2010 SRAP carried out a six-week season (from 15 June to 1 August 2010) including systematic archaeological survey, geomorphological coring survey, ceramic analyses and ground penetrating radar studies in the Sinop region, Turkey. In 2011 SRAP carried out six weeks of systematic archaeological field survey (1 July – 10 August).

Systematic archaeological survey

2010 season:

A team of approximately ten field walkers conducted three weeks of systematic pedestrian survey in the highlands to the west of Gerze, a secondary port of Sinop Province on the north coast of Turkey (Table 1). The team recorded on- and off- site data from 115 tracts ranging from 2500 m² to 10000 m² and identified the locations of ten previously unknown archaeological loci (Figure 1; Table 2).³ Team members spaced at 10 m intervals picked up 100% of all ceramic and lithic material encountered in 1 m transects. Collected materials were counted, weighed and photographed and

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³ The Sinop Regional Archaeological Project records loci at any location where surface evidence can be interpreted as the in-situ surface traces of human activity. Some of these loci might be traces of settlements, monumental structures, industrial areas, cemeteries, and so on. Lower density scatters of ceramics and other debris that are interpreted as off-site are recorded as background scatter (see Doonan 2004b for further discussion).

then returned to the fields from which they came. A very limited number of ceramic sherds were removed for further study. Approximately 38.3 ha were surveyed using this methodology. Locations of tracts and locus maps were recorded in a GIS developed by team member Matthew Conrad based on georeferenced, high-resolution Quickbird satellite images.⁴

Quadrant name (Ilce)	# tracts	# sites	Main cultural periods represented
Kadioğlu (Gerze)	9	0	N/A
Karlı North (Gerze)	30	1	Late Roman
Karlı West (Gerze)	28	5	Late Roman
Karlı South (Gerze)	19	2	Prehistoric, Late Roman
Mahmuttırı (Gerze)	12	1	Late Roman
Ömeroğlu (Gerze)	6	0	N/A

Table 1: Areas surveyed during the 2010 field season

The archaeological survey was very successful in obtaining systematic data to document the development of highland communications systems in the region. We concentrated near the villages of Karlı and Sarnic in an area covering approximately 10 km² (Table 1). Nine of the ten sites recorded were primarily late Roman/ early Byzantine (4th – 6th c. CE) in date, corresponding to a major demographic and industrial expansion noted by previous surveys by our team in other parts of Sinop promontory (Doonan 2004). Of interest was a small (ca. 0.25 ha) scatter (L10-06) of handmade pottery (possibly Bronze or Iron Age) that documents pre-colonial settlement in the area. The relative absence of sites or off-site scatter of evidence for late first millennium (particularly Hellenistic-related) occupation is distinctive among the areas of Sinop Promontory where we have worked in previous seasons.

Locus	Köy/ Mah.	Description	Date
10-01	Karlı West	Single tile burial	Late Roman
10-02	Karlı West	Small (0.05 ha) scatter of ceramics	Late Roman
10-03	Karlı West	Several burials, ca. 1 ha extent	Late Roman
10-04	Karlı West	Medium-large (1ha +) scatter of ceramics	Late Roman
10-05	Karlı East	Small (ca. 0.03 ha) scatter of tile, some ceramics	Late Roman
10-06	Karlı East	Small (ca. 0.03 ha) scatter of handmade pottery	Bronze/Iron Age?
10-07	Karlı East	Small (ca. 0.03 ha) scatter of tile and ceramics	Late Roman
10-08	Mahmuttırı	Single tile burial	Late Roman
10-09	Karlı West	Medium-large (1 ha+) scatter of tile, few ceramics	Late Roman
10-10	Karlı North	Heavy scatter of roof tiles	Late Roman

Table 2: Loci recorded during the 2010 survey

In addition to the systematic surveys behind Gerze the team also conducted gridded scraped-surface pick-up at two important Chalcolithic and Early Bronze Age sites: Maltepe (Hacıoğlu village) and Kocagöz (Demirci village). This work was intended to clarify the spatial organization and chronology of pre-colonial pottery assemblages in

⁴ We would like to acknowledge grants provided by California State University Northridge and Queens College, City University of New York that enabled us to purchase these images.

Sinop through a surface-based methodology (i.e. without excavation). Approximately 100 fragments of Bronze Age (ca. 3000-1000 BCE) ceramics have been removed for further physical characterization by Asst. Prof. Alexander Bauer at Queens College CUNY and luminescence dating by Dr. Aksel Casson at the University of Washington Luminescence laboratory.

2011 season:

The 2011 field season was designed to test the hypothesis that the construction and expansion of a major Roman road would have caused a dramatic reordering of the settlement pattern along an important communication route through the Black Sea mountains. In five weeks our team of approximately ten field walkers surveyed 165 tracts in ten quadrats using the methodology described above. The team recorded on- and off-site data in tracts ranging from 2500 m² to 10000m² comprising a total intensively sampled area of approximately 93 ha (Table 3).

Quadrant name (Ilce)	# tracts	# sites	Main cultural periods represented
Altinoglu (Sinop)	14	3	Iron Age, Early Byzantine, Ottoman
Kabalı çu (Sinop)	10	2	Early Byzantine
Kelemeroglu (Sinop)	11	3	Early Byzantine
Lala köyu (Sinop)	19	5	Early Bronze Age, Early Byzantine, Seljuk
Mızraklı (Sinop)	13	1	Early Byzantine
Sarıyer köyu (Sinop)	24	3	Early Byzantine
Tıngıroğlu köyu (Sinop)	14	4	Iron Age, Hellenistic, Early Byzantine
Çakıroğlu köyu (Gerze)	34	12	Early Byzantine, Ottoman
Çırnık köyu (Gerze)	16	3	Early Byzantine
Oğuzeli köyu (Gerze)	7	0	N/A

Table 3: surveyed areas, 2011 field season

The team recorded 35 archaeological loci (sites) in the areas under study (Figure 3, 4; Table 4). The vast majority (27 total) were found by systematic pedestrian field survey, although a few (8 total) were recorded with the assistance of local informants. All finds were weighed, counted and photographed from the systematic field surveys. A small fraction of study pieces (total, ca. 400) were removed to the Sinop Museum for further analysis and study. Of these a subsample (ca. 100) were brought to the United States for physical/ chemical analysis at Queens College CUNY and Luminescence dating at the University of Washington.

The most remarkable result of the season was the documentation of a dramatic increase in settlement density at the time of or (more likely) just after the expansion of a Roman road along the Kirkgeçit çayı - Kabalı çayı river system in the fourth century CE. This road is hypothesized based on the finds of a number of 4th c. CE milestones around the village of Erikli overlooking the Kirkgeçit çayı river about 5 km inland from the coast (elevation ca. 400 masl; French 1988). Least-cost path modeling of Roman road systems running from the coast to the important inland town of Boyabat suggests a path along this same river system (Fig. 4). An extensive Late Roman-Early Byzantine (4-7 c. CE) settlement developed at the mouth of this river system (modern village of Çakıroğlu). Numerous marble architectural fragments, a Byzantine/Seljuk caravanserai (w/ Roman spolia), and extensive settlement evidence suggest a medium sized port here from the 4th-7th c. CE and later on during Ottoman times. A distinct pattern of settlement in the terraces approximately 30-80 meters above the river bed appears to correspond with the road improvement suggested by the milestone finds (Figure 3).

Locus	Köy/ Mah.	Description	Date
11-01	Çakıroğlu	Buildings/ burials on coast	Byz, Ottoman
11-02	Çakıroğlu	Tile cemetery	Roman
11-03	Çakıroğlu	T11-10, 11-128, 11-130	Roman
11-04	Çakıroğlu	Cemetery in forest	Ottoman
11-05	Çakıroğlu	T11-01	Ottoman
11-06	Lala	"Taş han" kervanserai	Byz/Selcuk, Ottoman
11-07	Lala	Tumulus	Hellenistic
11-08	Altinoğlu	T11-13	Hellenistic
11-09	Altinoğlu	T11-19, 11-21	Hellenistic
11-10	Altinoğlu	T11-23	Iron Age
11-11	Altinoğlu	Stone/ tile building (grain mill?)	Byz, Ottoman
11-12	Lala	Huyuk	Bronze Age
11-13	Lala	T11-43, 11-45	Hellenistic/Roman
11-14	Çakıroğlu	Marble architectural fragments	Roman
11-15	Kelempereoğlu	T11-51, 53	Late Roman
11-16	Kelempereoğlu	T11-59	Late Roman
11-17	Kelempereoğlu	Church (?) in forest	Byzantine
11-18	Sarıyer	T11-68	Late Roman
11-19	Sarıyer	T11-74, 11-76	Late Roman
11-20	Sarıyer	T11-77	Late Roman
11-21	Abalı	T11-84, T11-87	Late Roman
11-22	Kabalı	T11-100	Late Roman
11-23	Mızraklı	T11-89	Hellenistic
11-24	Çırnık	T11-114	Late Roman
11-25	Çırnık	T11-115, 11-117, 11-119, 11-121, 11-125	Late Roman
11-26	Çakıroğlu	T11-118, 11-120	Late Roman
11-27	Çakıroğlu	T11-122, 11-124	Late Roman
11-28	Çakıroğlu	T11-134	Late Roman
11-29	Çakıroğlu	Destroyed building (called "church" by farmers)	Ottoman (?)
11-30	Çakıroğlu	T11-140, 11-141	Ottoman
11-31	Çakıroğlu	Pithos in sea scarp	Late Roman
11-32	Tıngiroğlu	T11-151, 11-152, 11-153	Iron Age/ Hellenistic
11-33	Tıngiroğlu	T11-154	Iron Age/ Hellenistic
11-34	Tıngiroğlu	T11-149, 11-155	Hellenistic
11-35	Tıngiroğlu	Inscription find spot; cut stone blocks	Roman

Table 4: Site list, Sinop Regional Archaeological Survey, 2011 Field Season

A significant concentration of late Roman/ Early Byzantine sites in Çakıroğlu mahalle suggests the development of an important local port there that would have connected the Kirkgeçit çayı drainage area to the sea, Sinop and beyond. The team recorded 12 loci of archaeological interest dating to late Roman, Byzantine and Ottoman periods. Furthermore, ten large and several more small fragments of fine limestone architectural elements (5 capitals, 3 columns, 2 bases, numerous smaller fragments) suggest a Roman monumental building of some importance in an as yet undiscovered location (Figure 6). Table 4 and Figure 5 provide basic information about the Roman and Byzantine sites in Çakıroğlu. Locus L11-01 is a major brick structure eroding out of the coastal scarp. This structure has already been recorded by other investigators and will not be discussed further here. Of particular interest are the sites labeled L11-002, L11-003, L11-028 and L11-031.

Near the previously recorded site on the coast: areas L11-031, L11-002 provide important information about the nature of the settlement near the coast. L11-031 is a coastal scarp approximately 50 m south of the previously recorded structure. Figure 7

clearly shows how a large pithos is eroding out of the cut face. The pithos is cut off by an upper layer of fill that suggests that the ancient layers are buried about a meter below the surface. The date (5-6 c. CE) of the archaeological deposits can be established by Late Roman Red slip ceramics from the fill. L11-002 is located about 150 meters inland of the coastal remains. A tractor road cut has exposed more than 10 Roman tile graves in a cemetery covered mostly by forest (Figure 8). It is impossible to assess how large the cemetery was, but it is logical to assume that this was the cemetery associated with the coastal settlement, suggesting a large (at least 30,000 m²) settlement.

Locus L11-003 is a large, dense scatter of Roman pottery and tile, suggesting a settlement of at least 20,000 m² (Figures 9, 10). The density of the scatter here was notable given that the recently harvested wheat covered most of the fields and the farmers had removed most of the tile and stone from the top 0.5 m of plowed soil.

Inland along the river bank to the west of a modern soap factory (L11-028) we recorded a flat area near the bottom of the valley that has been plowed deeply over many years. A consistent scatter of Roman pottery over ca. 10,000 m² should be considered only part of the original site. A neighboring villager noted that when the depot 75 m east of the site was constructed the construction trench was full of pottery. We saw no indication that the site did not continue to the west, and so it seems likely that an extensive area of occupation lies deeply buried in this area.

An Iron Age-Hellenistic settlement on a ridge on the north side of the valley approximately 1 km from the coast in Altinoglu (L11-09, L11-10; site noted in İşin 1998). This site sheds light on an early phase of the colonial engagement between Greek colonists and local communities most likely dated around the 4th c. BCE (Figures 11, 12). A similar engagement at roughly the same chronological horizon may be observed in the sites recorded in the village of Tıngıroğlu in the highlands several kilometers up the Kirkgeçit çay river (L11-32, L11-33). Next season's investigations should clarify the nature of the initial colonial relationships from this period.

In the highlands near the village of Tıngıroğlu we surveyed 21 tracts and identified 4 loci of archaeological interest (Figure 13). Three of the loci (L11-32, 33, 34) were likely datable to the mid-later first millennium BC. Two of the loci were small scatters of local handmade ceramics on top of natural mounded features. L11-34 was a 5+ ha scatter of local handmade wares together with Black Sand Tempered tiles and pottery and a few Hellenistic wares, suggesting that exchange had begun with coastal communities.

Geomorphological and environmental studies

During the summer 2010 field season, sediment cores were collected from five different locations in Sarikum Lake. The coring locations form a transect from the basin center out towards its eastern shore, and can be seen in Figure 14. The cores were retrieved using a 5cm diameter Livingstone piston corer, and reached up to 9 m into the sedimentary pile at the lake bottom. At locations 1, 2, and 5, only single sediment cores were retrieved due to time constraints. At locations 3 and 4, dual sediment cores with offset, overlapping drives were recovered. These offset, overlapping drives ensure recovery of the complete stratigraphic record because the gaps between drives in one core are covered by overlap with the second core. Altogether, approximately 40 m total of sediment core were obtained from these five locations. The sediment cores were shipped back to the U.S. to the Earth System Science Laboratory at Texas A&M

University--Corpus Christi where they are undergoing a detailed lab analysis. A discussion of this lab work is provided further below.

Prior to the sediment coring work, an attempt was made to document the sedimentary pack at the bottom of the lake using a seismic subbottom profiling system. However, strong, daily onshore winds, combined with the inability to use a motor on the lake due to its protected status, rendered this attempt unproductive. The same factors also prevented us from conducting a bathymetric survey for the basin as had been planned. However, physical depth soundings at the sediment coring locations suggest that the lake bottom is remarkably flat and even. The measured water depths varied only 10 cm (from 145-155 cm depth) over the length of the entire transect.

The sediment cores are currently undergoing a series of lab analyses to characterize their physical sedimentology. All sediment cores were split longitudinally into work and archive halves. Initial work focused on completely documenting these cores before destructive subsampling for additional analysis occurred. To this end, the cores were logged visually including for color, an estimate of grain size, and the presence of sedimentary structures and other macro-observable features such as fossils. High-resolution photographs were then taken of each core to provide a permanent visual archive of the stratigraphy. Finally, non-destructive magnetic susceptibility analysis using a Bartington MS3 meter and MS2E high-resolution surface sensor was performed at 1 cm resolution down the cores.

The sediment cores were then subsampled at 1 cm resolution using a 1 cc constant volume sampler. A total of >3800 subsamples were obtained from this work. These subsamples are being used in a chain of analyses that include wet and dry bulk density, and organic and inorganic carbon content via loss-on-ignition. Currently, all >3800 subsamples have undergone the bulk density analysis, and 2100 of the subsamples have furthermore undergone the loss-on-ignition analysis. The remaining ~1700 samples that have not yet undergone loss-on-ignition analysis are in queue, and it is expected that this will be completed in fall 2012.

After the basic physical sedimentology analyses mentioned above are completed, grain size and microfossil assemblage analysis will be undertaken, but on a more selective basis.

Analyses are still underway, as are the the integration, analysis, and interpretation of the large body of data that we have generated, but we can report our preliminary observations and interpretations here. In general, the cores show visual banding at the decimeter to multi-decimeter scale, and this is broadly related to two styles of sedimentation. In one case, the sediments are more greenish/brownish in color, and contain common shell hash fragments. In the other case, the sediments have a more grayish blue color, and less shell hash. Given that the Sarikum basin is marginal to the Black Sea, we suggest these differing sedimentologies may represent accumulation during periods of differing salinity. In particular, the greenish/brown style with common shell hash may represent more brackish conditions. And the bluish gray style with lesser shell hash may represent overall fresher conditions. If this is the case, several mechanisms (or a combination of them) may possibly play a role in this variation. For example, a simple geomorphic change to the lake outlet may leave the basin more or less exposed to the marine influence of the Black Sea. Variations in the rate of sea level rise could have a similar effect. A climatic control might also be involved. For

example, during periods of drier climate, a reduced flow of fresh water may allow marine water to more easily back up into the lake. Future microfossil assemblage analysis should allow us to evaluate the interpretation that variation in the sedimentation style at Sarikum may be related to salinity.

Ceramic studies

Two programs of ceramic analysis were advanced during the 2010 and 2011 field seasons. The first is designed to develop a typology of ceramic fabrication practices and processes for handmade wares for the most part from the Chalcolithic through Iron Ages (Bauer, Casson and Doonan 2012). The second is a detailed study of the distribution of Late Roman Red-slip wares collected by SRAP in all areas of Sinop Province.

Pre-historic handmade ceramics

Study of the pre-Colonial handmade ceramics from the 2010 and 2011 field seasons was undertaken in the field and the project's study laboratory by Dr. Aksel Casson of Slippery Rock University and Dr. Alexander Bauer of Queens College, City University of New York. One locus containing handmade ceramics was identified in 2010 and given a provisional Iron Age date based on stylistic comparisons and contextual data. In 2011, 4 sites with handmade material were identified and have been provisionally dated to the Bronze Age (L11-12, Lala Höyük) and the Iron Age (L11-23, L11-32, L11-33), though the Iron Age attribution is only preliminary and remains to be tested. The handmade material was identified following an established typology based on ceramic fabric characterization and manufacturing techniques such as the use of temper and surface treatment (Doonan and Bauer 2005, Bauer 2011).

Characterization in the field was accomplished with the aid of a portable digital microscope with which 50x microphotos were obtained of thick sections of the collected ceramics. This imagery was used to identify individual compositional features such as clay paste, inclusions and temper, as well as data about firing temperature and atmosphere. These data, combined with traditional typological information regarding form and decoration, provide a way to identify the entire process of pottery-making and thus understand more fully the organization of ceramic production across the region.

In addition, samples of the handmade wares were taken from each site for direct dating using luminescence, under the supervision of Dr. Aksel Casson at the University of Washington Luminescence Laboratory. Luminescence dating yields dates for the most recent time that the ceramic matrix of pottery was heated (to temperatures over 400° C) or exposed to sunlight. This typically corresponds to the manufacture of the pottery and as such provides a direct date of anthropological interest, with no need for calibration or use of bridging arguments (Feathers 2003).

During 2010 and 2011, 18 ceramic sherds were subjected to luminescence dating, bringing the total of dated sherds from the Sinop Regional Archaeological Project to 70. Methods followed standard procedures as outlined in Doonan and Casson (2008) These dates were obtained in order to allow for the regional comparison of ceramic typologies and to provide insight into patterns of settlement in the region.

Preliminary dates for the 18 sherds, representing four sites, are presented below. These four sites, surveyed by SRAP in earlier seasons, were selected for additional sampling because of their importance to understanding the prehistoric sequence of the

region and their varied assemblages of ware types. Ages and error terms are rounded to the nearest 100 years, reflecting the preliminary nature of the luminescence data collected from these samples thus far. By preliminary, we mean simply that additional data will be gathered for each sample. These data (radioactivity, equivalent dose, etc.) may shift ages slightly and will, in all likelihood, increase the precision of each date. This will be particularly important for samples like U2248, with a %error approaching 30%.

UW Sample Number	SRAP Designation	Site/Locus	Luminescence Age (BC)	Error Term
U2250	L98.25.7	Güllüavlu	1200	400
U2251	L98.25.8	Güllüavlu	3300	600
U2253	L98.25.28	Güllüavlu	2800	400
U2254	L98.25.31	Güllüavlu	3300	400
U2255	L98.25.35	Güllüavlu	2500	300
U2257	L98.25.76	Güllüavlu	2500	400
U2258	L98.25.81	Güllüavlu	2900	300
U2260	L98.29.23	Hacıoğlu	5500	400
U2261	L98.29.38	Hacıoğlu	2100	300
U2264	L98.29.39	Hacıoğlu	4400	500
U2267	L98.29.92	Hacıoğlu	4800	400
U2247	96.24A.31	Kocagöz	2400	400
U2248	96.24A.33	Kocagöz	7900	2600
U2289	96.24A.01	Kocagöz	2700	200
U2269	T99.80.01	Mezarlıktepe	3500	400
U2270	T99.80.04	Mezarlıktepe	4000	400
U2275	T99.80.32	Mezarlıktepe	2100	200
U2289	T99.80.10	Mezarlıktepe	1800	300

Table 5: 2010-12 Luminescence dates

Aside from increasing the number of dates for each of these sites, of particular concern has been to increase the number of dates for each ware type as well. Our ultimate goal is to develop a comprehensive typological and chronological sequence of the handmade, prehistoric wares across the region. This methodology was first reported at the 2012 Society for American Archaeology (SAA) annual meetings (Bauer, Casson and Doonan 2012).

Late Roman ceramics

Ceramic studies were carried out in the field and at the Sinop Museum during the 2010 field season. Dr. Krzysztof Domzalski of the Institute of Archaeology, Polish Academy of Sciences analyzed several thousand fragments of pottery collected in previous seasons and held at the Sinop Regional Archaeological Museum. He is preparing publications of the later Roman assemblages from our survey and in particular late Roman imports from Africa, other parts of Turkey and the Black Sea region. An interim report is in

preparation and final results will be published together with the other results from the 1996-2006 survey seasons.

Dr. Krzysztof Domżański (Institute of Archaeology and Ethnology, Polish Academy of Sciences in Warsaw, Poland) began the project of recording and studying finds of fine pottery from the Sinop Regional Archaeological Survey, led by Prof. Dr. Owen P. Doonan, focusing on Late Roman materials (4th – 6th centuries AD). The reported one-week-long work (24-31.07.2010) was devoted to studying the materials collected during five field seasons (1996-1999 and 2010) and stored in the local Archaeological Museum in Sinop. No drawings in addition to the working drawings produced by the survey were produced, although corrections to existing drawings were noted.

Altogether 300 pottery assemblages, collected in the areas of the identified archaeological sites were examined. The vast majority of the collected sherds represent the category of coarse pottery from the prehistoric times until the pre-modern period, which is a typical result of any surface prospection. However, 28 sites yielded fine pottery fragments representing red slip ware and related groups, distributed around the Black Sea basin and dated to the 4th – 6th centuries AD. Altogether 52 Late Roman fine pottery sherds were identified. They were divided by wares coming from different production centers, following the criteria of the fabric i.e., the macroscopic qualities of the clay and slip, characteristic for respective products. As the next step, fragments assigned to respective groups were arranged according to vessel forms and their variants. Although all the artifacts have been preserved only fragmentarily the majority are the so-called diagnostic fragments, i.e., ones allowing to determine the form of the vessel. The studied fragments represent three main pottery groups coming from production centers located in various parts of the Late Roman world: in the western Mediterranean (African Red Slip Ware – ARS), eastern Aegean – Late Roman C/Phocean Red Slip Ware (LRC/PhRS), and from one unknown centre located somewhere close to the Black Sea coast (northern Asia Minor?), called tentatively Pontic Red Slip Ware (PRS). The most numerous (32 frs.) were finds of the PRS group, dated to the 4th-early 5th centuries. The Aegean products (LRC/PhRS, 14 frs.) were dated to the late 5th – mid-6th centuries. The remaining 5 fragments represent the ARS vessels, coming from the most distant production centre, and dated to the late 4th – early 5th, and 6th centuries. Moreover, the analysis allowed to identify one fragment belonging to the relatively little-known group, called by the present author Late Roman Pontic Burnished Ware (LRPB) which was the possible successor of the Pontic Red Slip Ware in the 6th and early 7th centuries.

The studied finds can be used as a valuable chronological indicator for conducting the diachronic analysis of the settlement pattern around Sinop. They also shed some light on long-distance trade connections of Sinop in the Late Antiquity. The most striking result of the reported analysis was the relatively insignificant number of the Late Classical, Hellenistic and, especially, Early Roman fine ceramics collected in the surveyed area. These fine wares (black-gloss, color-coated, terra sigillata wares), imported to the investigated region between the 4th century BC and the 3rd century AD, were registered in 47 identified archaeological sites and their number is rather limited. At this background, the development of the settlement activity around Sinop, and penetration of imported goods into the rural hinterland of this harbor-town from the 4th century AD onwards look very impressive. This may be explained by the unstable situation in the northern Pontic areas during the Migration Period, and the necessity of

securing continuous agricultural production, especially as the periods when supply based on sea-borne trade was impossible, were more and more frequent.

Geophysics

Team member Emre Evren of Istanbul Technical University conducted a Ground Penetrating Radar (GPR) survey in areas of the ancient citadel of Sinope, in particular the site of the former municipal bus station that had been paved over several decades ago (Figure 16). A public park is planned for the site, which is at the entrance to the city. The GPR survey in the main area of investigation revealed a large structure and numerous small metal features, possibly related to the archaic cemetery (Figure 17). The overall impression is that early levels (pre-colonial through Hellenistic and Roman) are likely to be largely intact beneath the paved surface.

Conclusions

The 2010 and 2011 field seasons have provided the base for a new understanding of evolving cultural, demographic and economic processes in a crucial corridor for communications between the coast and the long-established road system through the North Anatolian fault zone.

There are three main new results we can highlight from the 2010 season at Sinop:

- 1) Foothills and highlands in Karli area developed significantly in the 4th-6th c. CE, coinciding with the demographic/ economic boom observed in previous seasons in Demirci and Karasu valleys.
- 2) Patterns near possible mountain transportation routes appear to show significant variation in locus distribution and background scatter
- 3) Sinop citadel may hold promise for some intact early cemetery areas. Extent of previously documented pre-Greek settlement is still unclear.

The primary results of the 2011 field season may be summarized as follows:

- 1) Coastal areas surveyed show a significant early Byzantine expansion (4-7 CE). There is evidence that suggests a major Early Byzantine port settlement at Çakıroğlu that should be investigated more closely through geophysical survey and possibly excavation.
- 2) Early Byzantine settlement appears to be dense along both banks of the Kırkgeçit çayı river, possibly supporting the hypothesis that a major expansion of the Roman road along this valley promoted an expansion of settlement.
- 3) Limited highland surveys suggest widespread Iron Age and Hellenistic settlement, and at least one late Roman monumental structure in Tıngıroğlu should be investigated through geophysical survey. Evidence of a monumental stone building may be associated with an inscription from Tıngıroğlu published by D. French (2005) and held in the Sinop Museum.

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Illustrations:

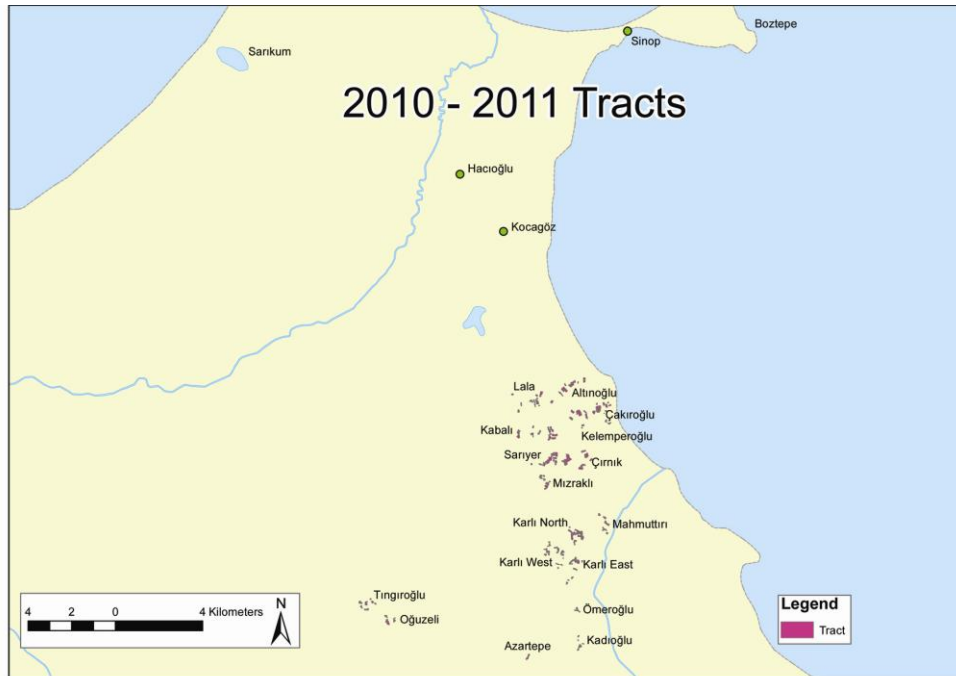


Figure 1: Map, 2010 and 2011 survey areas in Karlı, upper and lower Kırkgeçit çayı areas indicated by shading and name. Maltepe (Hacıoğlu köy), Kocagöz (Demirci köy), Sinop and Sarıkum lake also indicated.

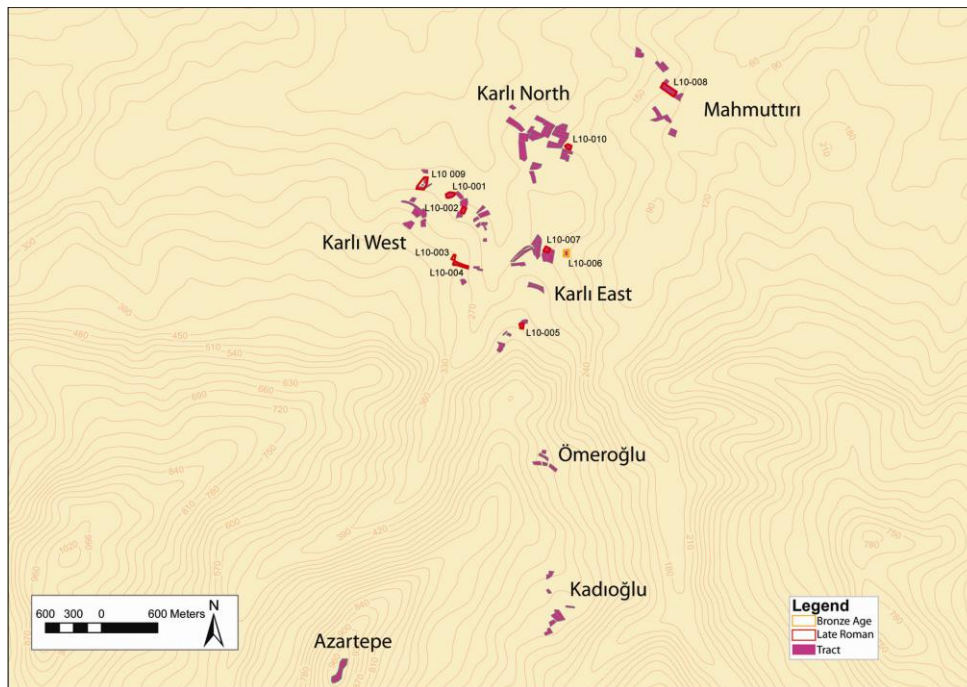


Figure 2: Map, 2010 survey, Karlı area tracts (shaded), indicating sites outlines identified by locus (L10-*) numbers.

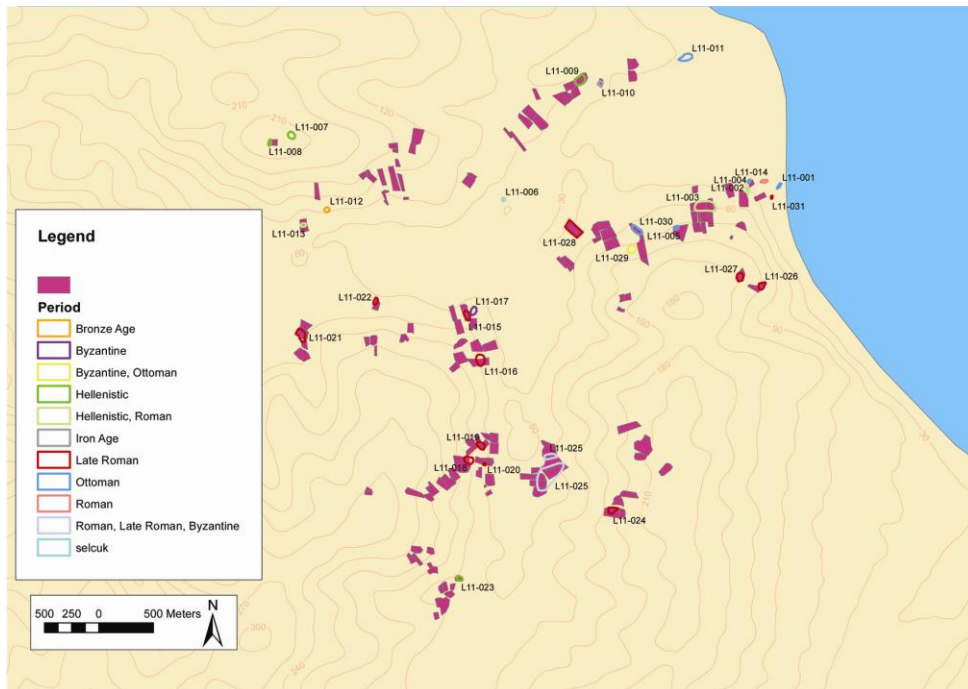


Figure 3: Map, 2011 survey, tracts in the lower drainage of the Kırkgeçitçayı-Kabalı çayı river drainage, including villages in the Çakıroğlu, Altınoğlu, Lala, Sarıyer and Çırnık quadrants. Loci are indicated in outline. The river (not marked) flows through the gap in survey coverage from Southwest to Northeast, forming a small delta to the east of L11-011.

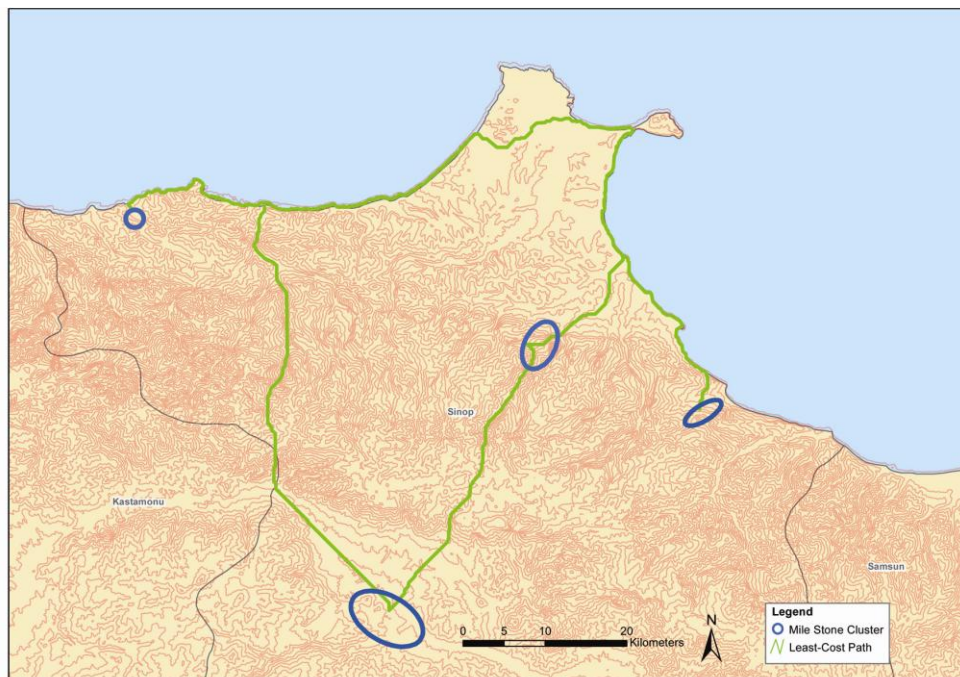


Figure 4: Topographic map of Sinop province, indicating clusters of Roman milestones in heavy ovals, and least-cost paths connecting Sinope through the main clusters of milestones. Note the path over the mountains through the cluster at Erikli village towards Boyabat departs the coastal road at Çakıroğlu.

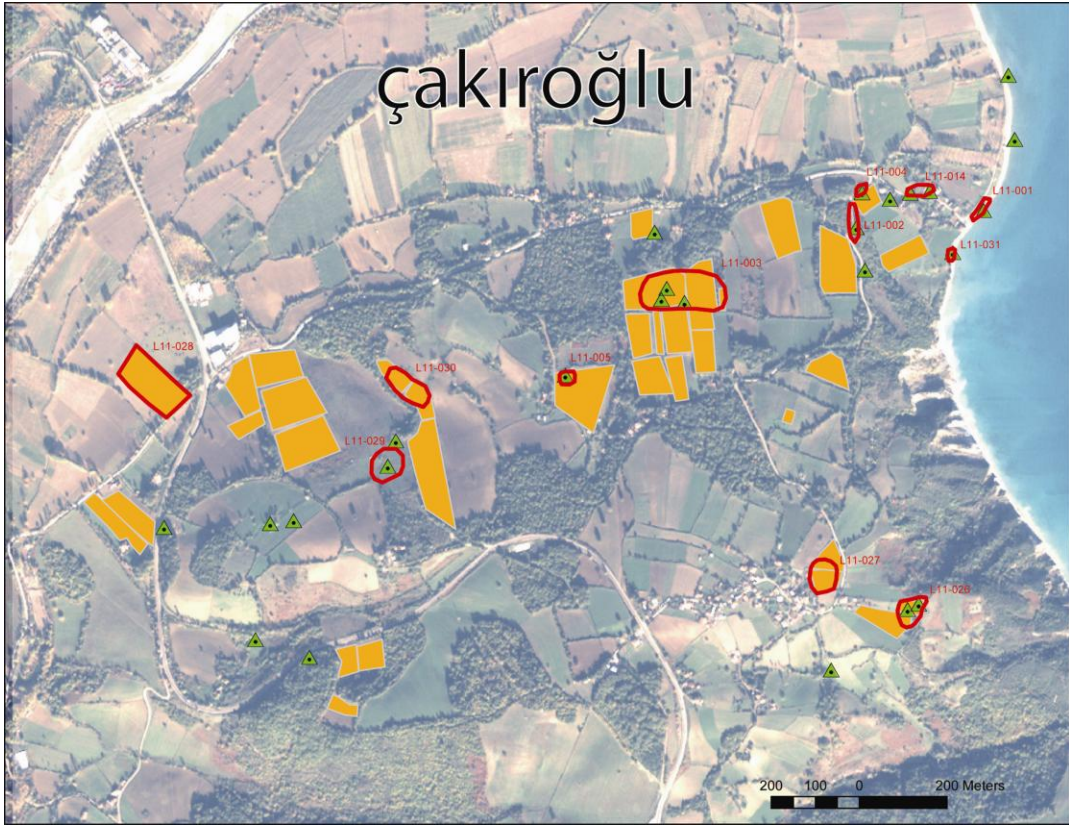


Figure 5: Çakıroğlu map indicating tracts and locus boundaries and numbers.



Figure 6: Limestone Ionic capital from monumental Roman building is one of more than a dozen architectural fragments from the village of Çakıroğlu.



Figure 7: Pithos eroding from the scarp at the coast at L11-31 in Çakiroğlu.



Figure 8: Roman tile cemetery (L11-02) eroding from a tractor road in Çakiroğlu.



Figure 9: Locus L11-03, an extensive scatter of stones, tile and ceramics indicating a stone and brick construction in Çakiroğlu. The pile of tile and stone in the center of the photo is one of several in this and the adjacent fields, suggesting extensive late Roman buildings here.



Figure 10: Late Roman diagnostic ceramics from L11-03 in Çakiroğlu.



Figure 11: Iyanin yeri (L11-09) site photo.



Figure 12: Iyanin yeri (L11-09) Iron Age and Hellenistic ceramics.

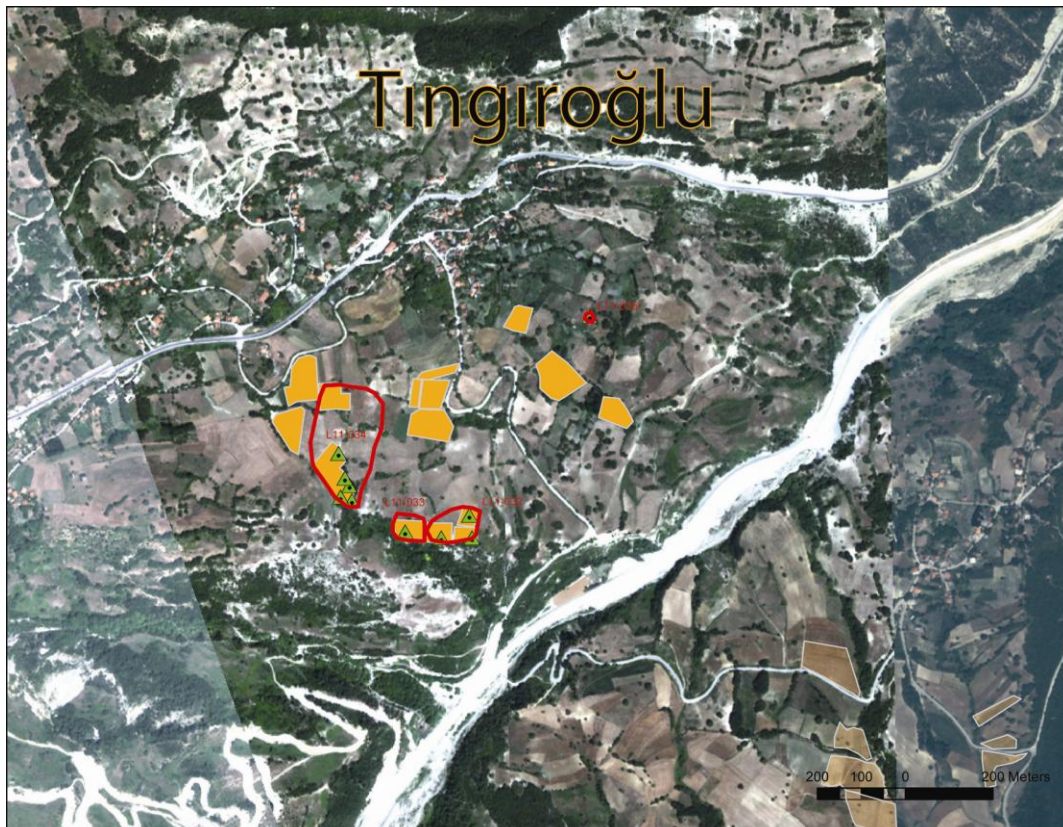


Figure 13: map of tracts and loci in Tingiroğlu quadrat.



Figure 14: Geomorphological core locations from Sarikum.



Figure 15: Locations of sites for Luminescence analyses. Sites 7 (Kocagöz), 8 (Mantarlık-Tıngiroğlu), 9 (Maltepe-Tıngiroğlu) and 10 (Köşk Höyük) have been emphasized in the 2010 and 2011 seasons.

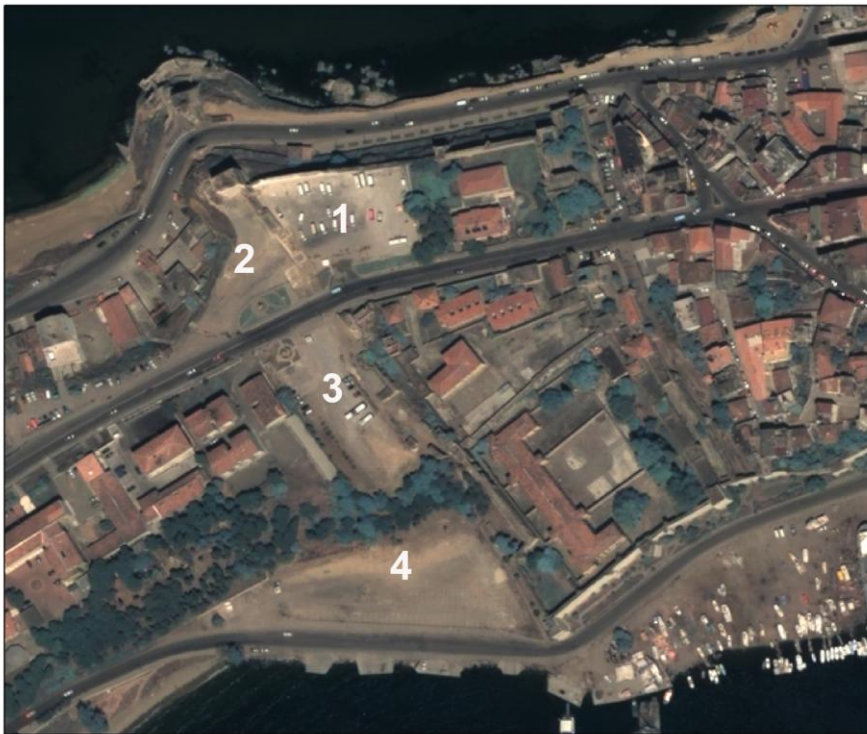


Figure 16: Aerial image of areas of Ground Penetrating Radar (GPR) survey in the area of Sinop kale.

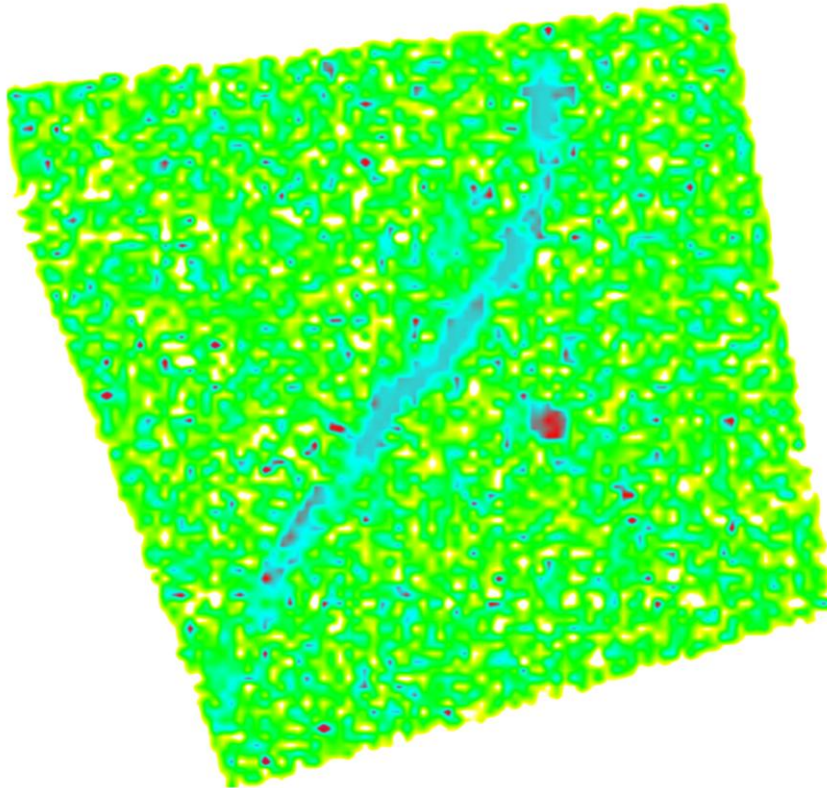


Figure 17: GPR imagery from the former Sinop Otogar, suggesting a large linear feature and several smaller hits.