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The Yaz I–III Settlement Pattern in the Serakhs Oasis, Southern Turkmenistan

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ABSTRACT

The paper deals with the archaeological materials of the Yaz period from surveys carried out in the Serakhs oasis (Turkmenistan) by the Polish Archaeological Mission in 2007–2008 and the following seasons of archaeological work in the oasis, which brought to light 16 new sites of this period. The settlement analysis in the Serakhs oasis indicates that the changes that took place here are comparable to settlement dynamics in other regions of Central Asia during the Iron Age.

KEYWORDS

Serakhs oasis; Turkmenistan; Iron Age (Yaz culture); pottery; settlements

1. Introduction

Chronologically, the so-called Yaz culture comes after the Oxus Civilisation – also known as the Bactria–Margiana Archaeological Complex – and starts in the second half of the second millennium BC, ending in the second half of the first millennium BC. In terms of its territorial range, the settlement area of the Yaz culture generally repeats the territory previously occupied by the Oxus Civilisation populations, that is, from north-eastern Iran through Turkmenistan, northern Afghanistan, Tajikistan and Uzbekistan.¹ In contrast to the richness of the Oxus Civilisation, material culture of the Iron Age appears to be strikingly utilitarian. All luxury objects characteristic of the previous period that we could connect to the existence of a complex hierarchical society, specialised crafts and long-distance trade ceased to exist. The absence of skeletal burials, which is usually connected with the Indo-Arian arrival in Central Asia, means that studies of the Iron Age are closely associated with the problem of Indo-Iranian and Indo-Arian migration. For this reason and also due to the fact that later the majority of the area became part of the Achaemenid Empire,² the Iron Age is a crucial period in Central Asian protohistory.

As has been shown in previous studies the early phase of the Iron Age (Yaz I) is characterised by significant regional differentiation expressed in different ceramic technologies, funerary practices and architectural techniques. Despite the high homogeneity that characterises the culture of Central Asia in the subsequent periods (Yaz II and Yaz III), it is also possible to identify its regional aspects. It should also be emphasised that



some regions, including the Serakhs oasis, are still archaeologically poorly known.

The Serakhs oasis, located in the Serakhs delta of the Tedjen River, is considered to be a westernmost region representing the oasis-based settlement typical to Central Asia. The paper will concentrate in particular on settlement dynamics during the Yaz periods. While also taking into account the location, the study of the Serakhs oasis could provide many new facts in the discussion, both from the point of view of Iran–Central Asia relations during the Iron Age and issues relating to the Iron Age settlement pattern studies in the desert oases of Central Asia. The research relies mostly on results of field survey in the area and the issue of pottery diagnostics for specific periods will be summarised here.

2. Area of study

The Serakhs oasis, located in southern Turkmenistan, covers the Serakhs delta of the Tedjen River. The area of the oasis is restricted by the Badkhyz upland in the south and south-east and the Karakum Desert in the east and north-east. In the north and north-west the Serakhs oasis is bordered by a small steppe-desert separating it from the main lower oasis of Tedjen, as well as the smaller Meana and Chaacha oases of the piedmont strip of the Kopet Dagh Mountains.

The economy in the oasis is traditionally based on herding and agriculture. The agricultural production in this area was and still is almost totally dependent on irrigation. All water available in the irrigation system of the

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¹It should be noted that the territory where Yaz culture pottery was identified is larger towards the north and contains the areas previously settled by “steppe cultures” (Lhuillier, “Les cultures ‘à céramique modelée peinte’ en Asie centrale,” 130–2).

²Cattenat and Gardin, “Diffusion comparée de quelques genres”; Vogelsang, *The Rise and Organisation of the Achaemenid Empire*, 267–83.

Serakhs oasis in Turkmenistan comes from one major canal – Salyr-yap – which has its origin in the area of the Badkhyz upland.³ Within the oasis, this canal divides into several branches including Han-yap, Karaman-yap, Ata-yap and Kichi-aga-yap (see Figure 2). Kichi-aga-yap is without doubt the largest, as it divides into four major canals in the proximity of Old Serakhs. As with the Ata-yap system, it carries water up to a distance of c. 50 km.⁴

The history of the irrigation system employed in the Serakhs oasis is still poorly studied. The same could be said of the earliest settlements in the oasis. The current state of research suggests that the oldest confirmed occupation of the oasis is dated to at least the Middle Bronze Age.⁵ The Iron Age (Yaz I–III culture), however, is currently the best-represented period within the oldest settlement in the oasis.

As a result of the work by the Polish Archaeological Mission in the Serakhs oasis, 16 new Yaz culture sites were identified,⁶ which together with the 5 that were previously known⁷ make the oasis an important area from the point of view of the history of the settlement of Yaz culture.

2.1. The study of Yaz I–III culture

The study of the Iron Age period (Yaz I–III) in Turkmenistan began in the late 1920s, some time after the

discovery of this culture by R. Pumpelly during excavation at Anau-depe in 1904.⁸

The first detailed description of Iron Age culture was made by V.M. Masson in the late 1950s. His first task was to establish the chronology for Yaz-depe and almost 30 other sites in the Merv oasis⁹ as well as other sites in Central Asia¹⁰ dated to the Iron Age. Masson's chronology is characterised by the division of the Iron Age into three phases: Early, Middle and Late corresponding to Yaz I, Yaz II and Yaz III.¹¹

Masson associated the beginning of the Iron Age (Yaz I) in Central Asia with the presence of “hand-modelled” and painted pottery with simple geometrical motifs. The transition to the Yaz II period was thought to be marked by the disappearance of “hand-modelled” and painted pottery and the dominance of wheel-turned cylindrical and truncated cone-shaped vessels, which were wrongly considered to be Achaemenid.¹² After excavations at Yaz-depe Masson suggested that the Yaz II period should be divided, on the basis of pottery forms, into three sub-phases. Masson distinguished the next period, Yaz III, based on architectural observation and on the pottery.¹³

Archaeological work conducted by Soviet scholars in the subsequent years revealed hundreds of Iron Age sites (Yaz I–III) in the area of Turkmenistan (Figure 1),¹⁴ in other countries of Central Asia, and in northern Afghanistan.¹⁵ Some scholars have encountered

³Orazov, *Arheologičeskie i arhitekturnye*, 30.

⁴During the period of Soviet rule the irrigation system of the Serakhs oasis was to some degree reorganised. The most important changes include the construction of a few water reservoirs and the connection of small branches of the Ata Yap and Kichi-aga-yap canals with the irrigation system of the lower delta of the Tedjen River. This was possible due to the construction of the Great Karakum Canal in this region (Buławka and Kaim, “The Iron Age in Serakhs Oasis (Turkmenistan),” 791–2).

⁵Pottery of this period was recently identified at Berdysygran-depe located in the northern part of the oasis. The only exception among the older settlement is the so-called Serahskoe Poselenie dated from the late Aeneolithic to the Middle Bronze Age, but it is located near the Tedjen River and not within the oasis itself (Adykov and Masson, “Drevnosti Tedžhen-Murgabskogo meždureč'ja,” 62; Masson, “Üznoturkmenistanskij centr rannezemledel'českikh kul'tur,” 22; Orazov, *Arheologičeskie i arhitekturnye*, 53–4; Kohl, *Central Asia. Palaeolithic Beginnings to the Iron Age*, 67).

⁶The archaeological survey in the oasis was funded through grants from the National Science Centre, Poland – Grant 2012/07/B/HS3/00908 (Narodowe Centrum Nauki, OPUS) and the Ministry of Science and Higher Education (Poland) (N109 007 31/0426, 2006–2009).

⁷Old Serakhs, Bäş-depe, Akja gala, Mowlek-depe, and Oyukly-depe (Marušenko, “Staryj Serahs (Otčet o raskopkah 1953 g.),” 173–6, 196–8; Masson, *Drevnezemledel'českaâ Kul'tura Margiany*, 50; Orazov, *Arheologičeskie i arhitekturnye*, 37–46, 51, 95; Pilipko, “Kompleks keramiki ahemenidskogo,” 95–8).

⁸Initially, the Iron Age was named the Anau IV period, and the Intermediate Occupation between Anau III and IV period were also distinguished (Pumpelly, *Explorations in Turkestan*, 49–50, 145–9).

⁹Masson, *Drevnezemledel'českaâ Kul'tura Margiany*, 62–90.

¹⁰Masson, *Drevnezemledel'českaâ Kul'tura Margiany*, 41–62, 90–2.

¹¹Masson, *Drevnezemledel'českaâ Kul'tura Margiany*, 34–41, 63–92; Yaz I: 900–650 BC, Yaz II: 650–450 BC, Yaz III: 450–350 BC (Masson, *Drevnezemledel'českaâ Kul'tura Margiany*, 48).

¹²Masson associated the Yaz I material culture with the Median period (*Drevnezemledel'českaâ Kul'tura Margiany*, 130–4). Furthermore, in his reflection on the revolt in Margiana, he wrote that the decline of the Aravalli micro-oasis at the beginning of the Yaz II period was caused by the destruction of this region by the army of Dadarshish (Dādarāshī) during Darius' rule (*Drevnezemledel'českaâ Kul'tura Margiany*, 142, n. 46).

¹³Masson, *Drevnezemledel'českaâ Kul'tura Margiany*, 39–41.

¹⁴Sites in the Kopet Dag piedmont zone – Garry-Kiariz I: Pilipko, “Poselenie ranneželeznogo veka Garry-Kâriz I,” 28–58; Hyrly-depe: Pilipko, “Raskopki na Hyrly-depe,” 57–80; Ovadan-depe: Hlopina, “Namazga-depe and the Late Bronze Age of Southern Turkmenia,” 37; El'ken-depe: Kačuris, “Raskopki v El'ken-depe v Južnoj Turkmenii,” 335–6; Pilipko, “Keramičeskaâ peč ranneželeznogo,” 70–3; Dashly oasis: Pilipko, “Nekotorye itogi razvedyvatel'nogo,” 91–3; “Rannij železnyj vek Ėteka (üžnyj Turkmenistan),” 8–18; Yassi-depe, Yashilli-depe, and Garaoi-depe: Gutlyev, “Raboty na poselenii ranneželeznogo,” 64; “Äsy-depe,” 423–4; “Raskopki na poselenii,” 504; “Stratigrafičeskij šurf Äšylydepe u Gäursa,” 21; “Raskopki Garaoi-depe,” 33–47; Gutlyev and Zadneprovskij, “Äšildepe – ėtallonij pamätnik ranneželeznogo veka,” 44; Ulug-depe: Kačuris and Sarianidi, “Raskopki na Ulug-depe,” 342–4; Sarianidi, “Prodolženie rabot na Ulug-depe,” 434; “Issledovanie sloev ranneželeznogo,” 433–4; “Raskopki 1970 g. na Ulug-depe,” 53–55; Tedjen deltas: Adykov and Masson, “Drevnosti Tedžhen-Murgabskogo meždureč'ja,” 63–4, fig. 1; Kačuris, “K izučeniü ovliädepinskogo,” 109–15; Orazov, “Nekotorye itogi arheologičeskikh issledovanij,” 130–1; *Arheologičeskie i arhitekturnye*, 37–41, 44–6, 51, 95; Murgab delta: Usmanova, “Ėrk-kala (Po materialam ŪTAKĖ 1955–1959 gg.),” 20–32, 94; Gutlyev, “Raboty v nizov'äh Murgaba,” 547; Masimov, “Novye pamätniki ranneželeznogo,” 20–33; Udeumuradov, “Razvedočnye issledovaniâ Äjindepe,” 555–6; Masimov and Udeumuradov, “Novye materialy po ranneželeznomu,” 12–27.

¹⁵Uzbekistan; see e.g. Askarov, “Raspisnaâ keramika Džar-Kutana,” 17–19; “Raskopki Pšaktepa na üge Uzbekistana,” 30–41; Askarov and Al'baum, *Poselenie Kučuk-tepe*; Beläeva and Hakimov, “Drevnebaktrijskie pamätniki Miršade,” 33–51; Duke, “Pšaktepe – pamätnik kul'tury Severnoj Baktrii,” 36–8; Isamidinov, *Erkurgan*

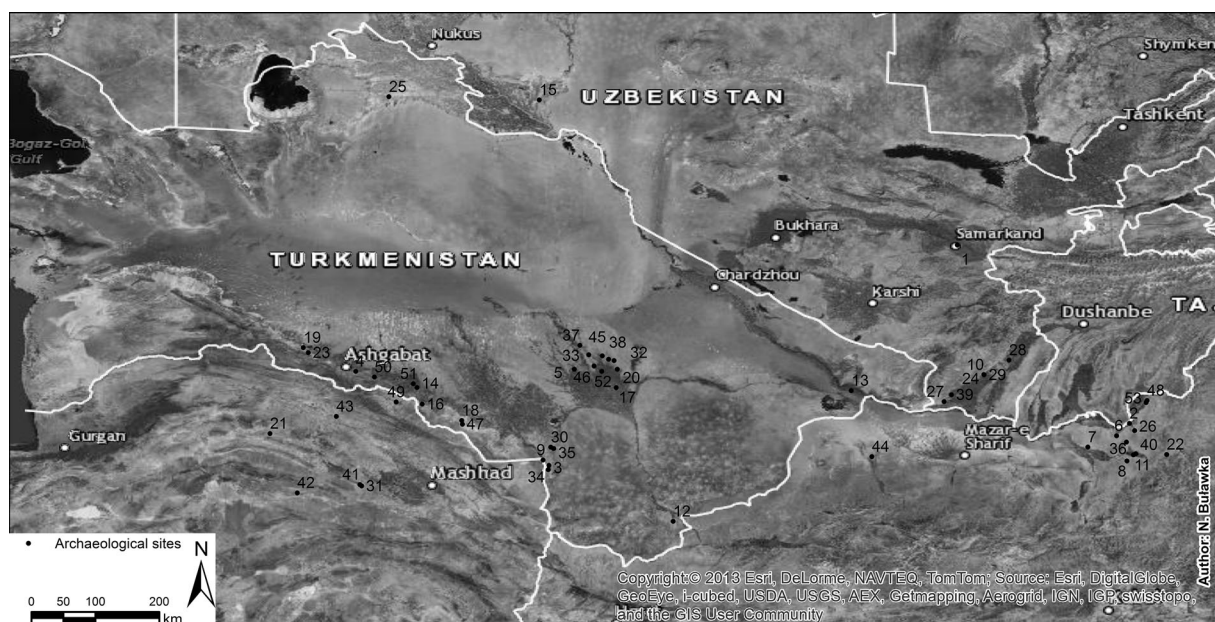


Figure 1. Archaeological sites dated to Yaz culture and mentioned in the paper. Key: 1 – Afrasiab; 2 – Ai Khanum; 3 – Akja gala; 4 – Anau-depe S; 5 – Aravali-depe; 6 – Archi 24; 7 – Asqalon 487; 8 – Bangi 355; 9 – Baş-depe; 10 – Bektepa; 11 – Chashma Shir 40; 12 – Chommek-depe; 13 – Chopli-depe; 14 – Dashly-depe D-3, D-16, D-17, D-30; 15 – Dingildze; 16 – El’ken-depe; 17 – Erk Qala; 18 – Garaoi-depe; 19 – Garry Kiariz I; 20 – Garry Kishman (aka Staryj Kishman); 21 – Jeyran Tepe; 22 – Kalafgan 322; 23 – Khyrly-depe; 24 – Kindyktepa; 25 – Kiuzeli-Gyr; 26 – Kokcha 413; 27 – Kuchuktepa; 28 – Kyzylcha 6; 29 – Maydatepa; 30 – Mowlek-depe; 31 – Nishapur P; 32 – no. 172 in Merv oasis; 33 – no. 999 in Merv oasis; 34 – Old Serakhs; 35 – Oyukly-depe; 36 – Rud-i Shahrawan; 37 – Taip oasis; 38 – Takhirbai-depe; 39 – Talashkantepe; 40 – Taluqan 234; 41 – Tapeh Baluch; 42 – Tepe Damghani; 43 – Tepe Yam; 44 – Tillya-tepe; 45 – Togolok oasis; 46 – Uch-depe; 47 – Ulug-depe; 48 – Yangi Qala 544; 49 – Yarim Tepe; 50 – Yashilli-depe; 51 – Yassy-depe; 52 – Yaz-depe; 53 – Zard Kamar 556.

difficulties, however, with the application of the chronology developed by Masson and as a consequence some sites were generally dated as Yaz II/III or Achaemenid.¹⁶ V.N. Pilipko justifies his independent chronology by the fact that during studies of the Dashly oasis, in the central part of southern Turkmenistan, he had the opportunity to examine sites that contain the “pure” layers of each phase of the Iron Age, as well as multi-layered sites.¹⁷ Pilipko’s pottery classification also divided the Iron Age

into three periods, although the same pottery shapes known from Yaz-depe are arranged differently from the typology developed by Masson.¹⁸

At the turn of the 1970s and 1980s, the changes in USSR–USA relations also had a serious impact on archaeology in this area.¹⁹ The work of C.C. Lamberg-Karlovsky and Ph. Kohl²⁰ as well as their publications²¹ and the discoveries of sites with material characteristic to Yaz culture in northern Iran,²² resulted in the growth of interest

(*stratigrafiâ i periodizaciâ*): Pidaev, “Otkrytie novogo pamâtnika seređiny 1 tys. do n.e.,” 77–82; Rtveladze, “Razvedochnoe izučenie baktrijskih,” 74–85; “K harakteristike pamâtnikov Surhan-dar’inskoj,” 262–6; Rtveladze and Hakimov, “Maršrutnye issledovaniâ pamâtnikov Severnoj Baktrii”; Sagdullaev, “Raskopki drevnebaktrijskoj usad’by Kyzylča 6,” 228–35; Sagdullaev and Hakimov, “Arheologičeskoe izučenie gorodiša Kyzyl-tepe,” 24–9; Vorob’eva, *Dingil’dže. Usad’ba I tysâčetiâ*. Afghanistan; see e.g. Sarianidi, *Raskopki Tillâ-tepe v severnom Afganistane*; *Drevnie zemledel’cy Afganistana*, 107–28. Tadjikistan; see e.g. Zejmal, “Drevnezemledel’českoe poselenie Boldaj-tepe,” 80–100.

¹⁶See e.g. Kačuriš and Sarianidi, “Raskopki na Ulug-depe,” 344–5; Orazov, *Arheologičeskie i arhitekturnye*, 94–9; Gutlyev, “Raskopki Garaoi-depe”; “Raboty v Čardžouskoj i Ašhabadskoj oblastâh,” 487–8; “Stratigrafičeskij šurf na Garaoi-depe”; Masson and Sarianidi, *Central Asia*, 160–1; Košelenko and Sarianidi, “Mervskij oazis,” 183.

¹⁷Pilipko, “Rannij železnij vek Èteka (ùžnyj Turkmenistan),” 8–18.

¹⁸For example, jars with hook-shaped rims of the Yaz II period were attributed to the Etek I period (Masson, *Drevnezemledel’českaâ Kul’tura Margiany*, 39, pls. 38/3, 39/8; Pilipko, “Rannij železnij vek Èteka (ùžnyj Turkmenistan),” pl. 1/1,2,5,8). By contrast for Etek II, only jars with everted protruding rims were chosen (Pilipko, “Rannij železnij vek Èteka (ùžnyj Turkmenistan),” pl. 3/10,11). There are also some differences in the presence of hemispherical bowls (Masson, *Drevnezemledel’českaâ Kul’tura Margiany*, pl. 42/6,21; Pilipko, “Rannij železnij vek Èteka (ùžnyj Turkmenistan),” pl. 3/16,21, pl. 4. The plates with Masson’s typology were compiled later by V.I. Sarianidi (Košelenko, *Drevnejšie gosudarstva Kavkaza i Srednej Azii* pls. 64–7).

¹⁹Kohl, “The Namazga Civilization,” vii; Lamberg-Karlovsky, “Foreword,” xvii–xxix.

²⁰Lamberg-Karlovsky, “Foreword,” xix.

²¹Lamberg-Karlovsky, “Prehistoric Central Asia,” 43–6; Kohl, *The Bronze Age Civilization of Central Asia*; Lamberg-Karlovsky, “Afterword,” 386–97; Kohl, *Central Asia. Palaeolithic Beginnings to the Iron Age: passim*.

²²Venco Ricciardi, “Archaeological Survey in the Upper Atrek Valley (Khorasan, Iran),” 51–72; Kohl and Heskell, “Archaeological reconnaissance in the Darreh Gaz Plain,” 160–72; Kohl and Geskel, “Arheologičeskie pamâtniki ravniny Darre Gaz,” 33–47; Hiebert and Lamberg-Karlovsky, “Central Asia and the Indo-Iranian borderlands,” 1–15.

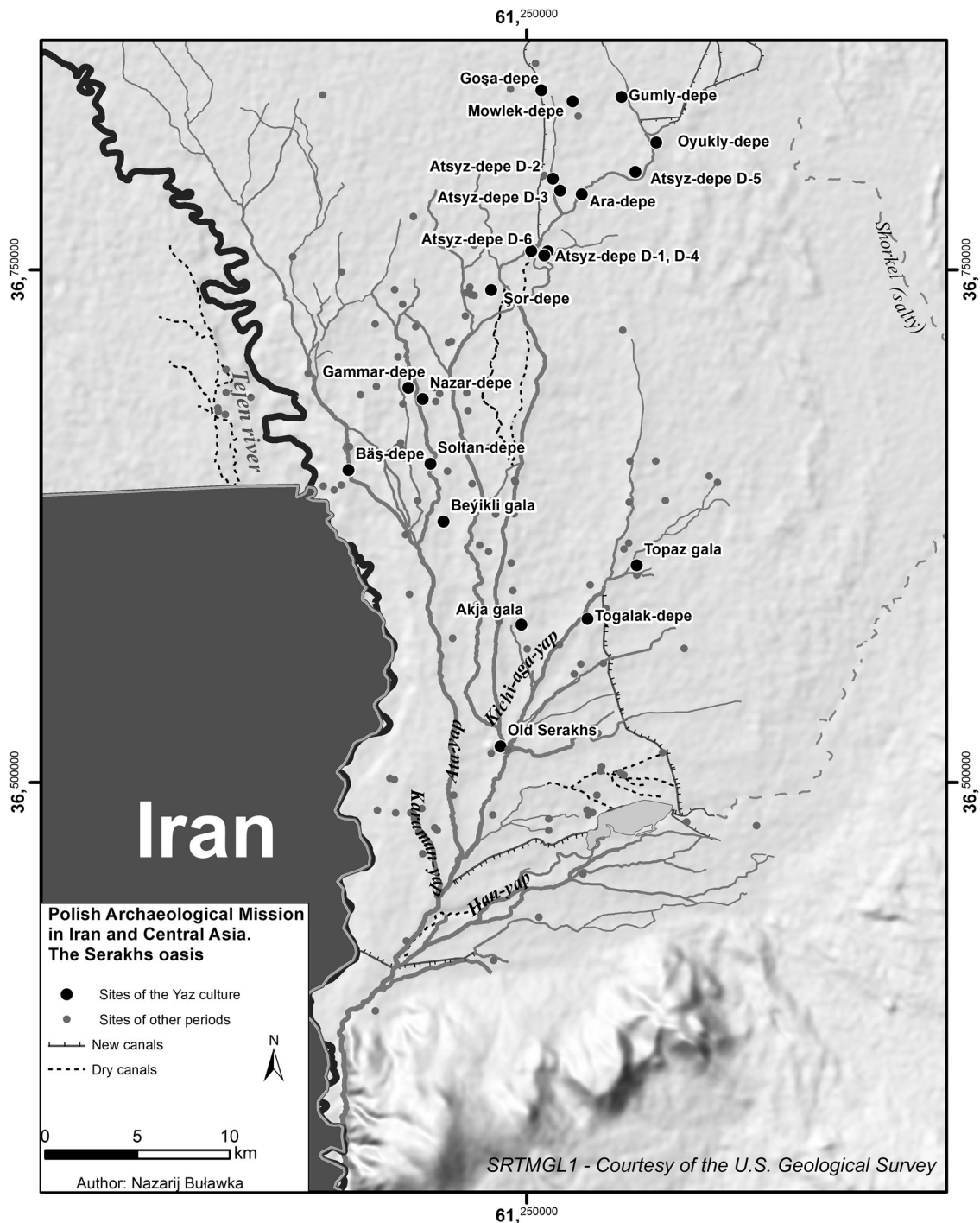


Figure 2. A map of the Iron Age sites in the Serakhs oasis.

in Central Asia by American and European scholars. Soon afterwards international missions took up the study

of Yaz I–III periods, including the Italian mission of Institute of Middle and Far East (IsMEO) in the Merv oasis,²³

²³Bonora and Vidale, "An Aspect of the Early Iron Age (Yaz I) Period in Margiana", 153–94; Cattani, "Excavations at Takhirbai-depe (thr-1) (1992-1993)", 97–104; Cattani et al., "The Murghab Delta in Central Asia 1990–2001", 39–45; Cattani and Genito, "The Pottery Chronological Seriation of the Murghab Delta," 75–87; Cattani and Salvatori, "Transects and Other Techniques," 1–14; Cerasetti, "A GIS for the Archaeology of the Murghab Delta," 29–37; Cleuziou, "Copper arrowheads Typology and Chronology," 119–23; Cleuziou, Gaibov, and Annaev, "Off-site Archaeological Transects in Northern Margiana," 27–33; Genito, "The Iron Age in Merv Oasis," 89–95; "Trial Trench at Site no. 215," 125–33; Gubaev, Koshelenko, and Tosi, *The Archaeological Map of the Murghab Delta*, 203–67; Joglekar, "A Preliminary Report on the Faunal Remains at Takhirbaj 1," 115–8; Salvatori, "The Margiana settlement pattern from the Middle Bronze Age," 57–9, 66–74; Vidale, Bianchetti, and Cattani, "A Semiprecious Stone-working Area Dating to the Late Iron Age," 105–13; Vidale, Battistella, and Guida, "Iron-Working and Ceramic Recycling," 195–220; Wright, "Non-graphic Information System and Diachronic Transformations," 47–56.

the French-Turkmen archaeological mission at Ulug-depe,²⁴ the French-Uzbek archaeological mission,²⁵ the German-Uzbek mission in Uzbekistan²⁶ and the American-Uzbek archaeological mission.²⁷

The intensive research conducted for the last three decades by various missions considerably altered previous knowledge of that period and it is clear that the most significant results were achieved in the chronology. The dating of the Iron Age has been shifted back several centuries,²⁸ conditioned by changes in the chronology of the Bronze Age. The most recent studies concentrated not only on the typology of the pottery²⁹ but also on the technological aspects of its production.³⁰ Although researchers agree that the distinguishing feature of the beginning of the Iron Age in Central Asia is the presence of the characteristic painted pottery, studies have shown that ceramics are produced in a variety of techniques, and are not only handmade or wheel-turned as previously thought. Moreover, the regional divisions of Central Asia within the Yaz culture on the basis of the painted pottery decoration,³¹ the differences in distribution of specific pottery types,³² the presence or absence of sites with pit-houses or monumental platforms and other aspects³³ are more and more evident.

The previously accepted area for Yaz culture was extended to the territory of north-eastern Iran as a result of the archaeological work conducted by Roberta Venco

Ricciardi,³⁴ Philip L. Kohl and Dennis L. Heskel.³⁵ This led to the conclusion that the area of north-eastern Iran has been related to Central Asia at least since the Namazga I period. This has a bearing on the Yaz I–III periods too³⁶ and therefore had an impact on future studies.

Interest in studies of the Yaz I–III area in north-eastern Iran increased. Nishapur P in the Nishapur plain should be mentioned,³⁷ where Yaz I pottery was identified within the archaeological material from the Iranian Expedition of the Metropolitan Museum of Art collection.³⁸ Moreover, recent studies also indicate the presence of Yaz I–III pottery in Sabzevar,³⁹ Esfarāyen, eastern Jajarm and the Bojnord plains.⁴⁰ The remnants of Iron Age settlements have been also identified at Tapeh Baluch in the Nishapur plain and a few sites in the Kashmar region. Unfortunately, information about these sites is very scarce⁴¹ and the detailed characteristics of pottery in the region therefore remain unknown.

The current state of research indicates that many sites that have been described as Achaemenid in Central Asia until 1990s could correspond both to the Yaz II (1000/900–600/560 BC) and Yaz III phases (600/560–330 BC). Thus, the correct identification of Yaz II and III pottery has become a very important issue in recent studies. Despite a large quantity of known sites and several published pottery classifications,⁴² this subject is

²⁴Boucharlat et al., "Recherches archéologiques récentes," 123–33; Lecomte, "A Group of Yaz II–III Stamp-impressions," 168–9; "Ulug-depe: 4000 Years of Evolution," 221–37; Boucharlat, Francfort, and Lecomte, "The Citadel of Ulug Depe and the Iron Age," 479–514.

²⁵Isamidinov and Rapen, "K stratigrafii gorodiša Koktepa," 68–79; Isamidinov, Rapen, and Grenet, "Raskopki na gorodiše Koktepa," 79–85; Isamidinov, Grenet, and Gricina, "Raboty Uzbeksko-francuzskoj arheologičeskoj," 68–76; Isamidinov, Almazova, and Rapen, "Kamennye orudiâ iz Koktepa," 70–78; Rapen, Isamidinov, and Gricina, "Raskopki v centralnoj časti gorodiša Koktepa (R-1)," 143–50.

²⁶Sverčkov and Boroffka, "Arheologičeskie issledovaniâ," 97–131; "Kompleks perioda Âz II iz Bandyhana," 50–6.

²⁷Sverčkov, Sin, and Boroffka, "Raskopki Kyzyltepa"; Sverčkov, Xin, and Boroffka, "Gorodiše Kyzyltepa (konec VI - konec IV vv. do n.è.)," 31–75; Mokrobodov and Xin, "The Investigations of the Uzbekistan-American Expedition," 88–97.

²⁸Cattani and Genito, "The Pottery Chronological Seriation of the Murghab Delta," 75; Lhuillier, *Le phénomène des "cultures à céramique modelée peinte" en Asie Centrale*, 71; "Les cultures à céramique modelée peinte" en Asie centrale," 103; Cerasetti, "Remote Sensing and Survey of the Murghab Alluvial Fan": table 1; Luneau, "A New Assessment of the End of the Oxus Civilization," 303–4.

²⁹See e.g. Lyonnet, *Prospectives archéologiques en Bactriane orientale (1974–1978)*, 84–9, 93–101, 111–2; Cattani and Genito, "The Pottery Chronological Seriation of the Murghab Delta" tables 4–5; Šajdullaev, "Untersuchungen zur frühen Eisenzeit in Nordbaktrien," 296–311.

³⁰Bonora and Vidale, "An Aspect of the Early Iron Age (Yaz I) Period in Margiana"; Bendezu-Sarmiento and Lhuillier, "Iron Age in Turkmenistan"; Lhuillier, "Les cultures 'à céramique modelée peinte' en Asie centrale"; Lhuillier et al., "The Middle Iron Age in Ulug depe."

³¹Buławka, "Decorative motifs of the Early Iron Age," 126–30; Lhuillier, *Le phénomène des "cultures à céramique modelée peinte" en Asie Centrale*, figs. 160, 161; "Les cultures 'à céramique modelée peinte' en Asie centrale," 127–32, fig. 7.

³²For instance, the globular jars/bowls with wide spout (Lhuillier, "Les cultures 'à céramique modelée peinte' en Asie centrale" fig. 7).

³³Lhuillier, *Le phénomène des "cultures à céramique modelée peinte" en Asie Centrale*, figs. 160, 161; "Les cultures 'à céramique modelée peinte' en Asie centrale," 127–32, fig. 7.

³⁴Tepe Yam and 16 other sites were mentioned (Venco Ricciardi, "Archaeological Survey in the Upper Atrek Valley (Khorasan, Iran)," 52, 55, 58–62).

³⁵Yarim Tepe and seventeen other sites (Kohl and Heskel, "Archaeological reconnaissance in the Darreh Gaz Plain").

³⁶Venco Ricciardi, "Archaeological Survey in the Upper Atrek Valley (Khorasan, Iran)," 56, 58–62; Kohl and Heskel, "Archaeological reconnaissance in the Darreh Gaz Plain".

³⁷Hiebert and Dyson, "Prehistoric Nishapur and the Frontier," 3–4.

³⁸Dimand et al., "The Iranian Expedition, 1937".

³⁹Tepe Damghani; see Francfort et al., "Preliminary Report on the Soundings at Tepe Damghani Sabzevar," 130.

⁴⁰Vahdati, "A BMAC Grave from Bojnord," 26; "Şri Mifragh va Ahan dar Khurāsān," 45–6, fig. 5/9–12, fig. 6; "A Preliminary Report on the First Season of Excavation at Jayran Tepe".

⁴¹Kashmar region (the names of the sites are unknown): see Spooner, "Southwest Khurasan," 200; Tapeh Baluch in Nishapur plain; see Garazhian, "Recent Excavations at Tapeh Baluch (Baluch Mound)," 25–26, 28.

⁴²Masson, *Drevnezemledel'českaâ Kul'tura Margiany*, 34–41; Zejmal', "Drevnezemledel'českoe poselenie Boldaj-tepe," 84–93; Vorob'eva, *Dingil'dže. Usad'ba I tysâčletijâ*, 118–41; Pilipko, "Rannij železnyj vek Èteka (ùžnyj Turkmenistan)," 8–18; Lyonnet, *Prospectives archéologiques en Bactriane orientale (1974–1978)*, 83–119; Cattani and Genito, "The Pottery Chronological Seriation of the Murghab Delta," 75–87; Šajdullaev, *Severnaâ Baktriâ v epohy rannego železnogo veka*, 79–97; "Untersuchungen zur frühen Eisenzeit in Nordbaktrien," 291–320; Boroffka and Sverchok, "The Jaz II and III Period Pottery".

particularly difficult.⁴³ In contrast to other regions in Central Asia, there are no recently developed approaches precisely to distinguish Yaz II and Yaz III pottery in Turkmenistan. This issue was recently highlighted by R. Bourcharlat, H-P. Francfort and O. Lecomte.⁴⁴ The presence of some differences in the pottery of individual areas of Central Asia, which was observed in studies of previous periods, should be taken into account.⁴⁵ Two different approaches of developing the typology of the pottery can be observed. The ceramic typology published in 2002 by Š.B. Šajdullaev for northern Bactria concentrated on the shapes of the whole vessels and their distribution in particular periods,⁴⁶ and a similar approach was taken in M. Cattani and B. Genito's typology for the Murghab delta.⁴⁷ A different view on the typology was given slightly earlier by B. Lyonnet for northern Afghanistan.⁴⁸ In a similar way to the works of F.T. Hiebert for Bronze Age pottery, special care was given to the typology of the rim shapes, which is especially useful for the interpretation of surface survey material.⁴⁹ The work of B. Lyonnet, however, concentrated mainly on the distribution of a few well-studied types of vessel rims in north-eastern Afghanistan and was based almost exclusively on closed vessels and coarse ware.⁵⁰ Recently, a more complete typology of Yaz I and Yaz II pottery was provided by J. Lhuillier who, to some degree, used both these approaches.⁵¹

Analysis of the pottery present at the sites identified in Central Asia suggests that only a few types of pottery could be taken into account as indicative of Yaz II or Yaz III: jars of different shapes, bowls/basins with developed rims and beakers/vases with very low carination.⁵²

The distinctive Yaz II pottery is represented by jars with two main rim shapes. The first has a clearly "hook-shaped" appearance⁵³ and seems to be the most evident among the biconical and cylindrical jars.⁵⁴ The second is the flattened rim with the characteristic groove or pinch present at the lateral surface,⁵⁵ as well as a recess below the rim and/or a rib on the shoulders.⁵⁶ This type of rim is present in both the basins/bowls with developed rims and the jars of different shapes.⁵⁷

The characteristics of Yaz III, according to scholars, include the presence of jars with rims in the form of a well-flattened coil, which is usually described as "manchette-shaped".⁵⁸ This shape can be specified as follows: the rim is very flattened and elongated, its lateral surface is usually convex, occasionally altered by grooving.⁵⁹ The most important factor is the lack of a recess below the rim.⁶⁰ According to Lyonnet the upper side of the rim can be either flattened or rounded.⁶¹

According to some scholars the distinctive Yaz III type also comprises high cylindrical vessels with very low carination, which are also described as "can-shaped"

⁴³Genito, "The Iron Age in Merv Oasis," 91; Pilipko, "Kompleks keramiki ahemenidskogo," 95; Bourcharlat, Francfort, and Lecomte, "The Citadel of Ulug Depe and the Iron Age," 489.

⁴⁴Bourcharlat, Francfort, and Lecomte, "The Citadel of Ulug Depe and the Iron Age," 489.

⁴⁵Lhuillier, "Les cultures à céramique modelée peinte' en Asie centrale," 127–32, fig. 7; Lhuillier et al., "The Middle Iron Age in Ulug depe," 22–4.

⁴⁶Šajdullaev, "Untersuchungen zur frühen Eisenzeit in Nordbaktrien," 296–311.

⁴⁷Cattani and Genito, "The Pottery Chronological Seriation of the Murghab Delta," 75–87.

⁴⁸Lyonnet, *Prospections archéologiques en Bactriane orientale (1974–1978)*, 84–101.

⁴⁹Hiebert, *Origins of the Bronze Age Oasis Civilization in Central Asia*, 41–58.

⁵⁰Lyonnet, *Prospections archéologiques en Bactriane orientale (1974–1978)*, figs. 35–7.

⁵¹Lhuillier, *Le phénomène des "cultures à céramique modelée peinte" en Asie Centrale*, 189–95, Annexe 6, fig. 52/1, 52/2, 52/3; Lhuillier, Isamiddinov, and Rapin, "Ranneželeznyj vek severnogo Sogda"; Lhuillier et al., "The Middle Iron Age in Ulug depe," 14–18.

⁵²Cattani and Genito, "The Pottery Chronological Seriation of the Murghab Delta" table 5/4.

⁵³The term "hook-shaped" can be specified here as an everted rim with the lip bent vertically downwards and not attached to the wall of the vessel. This type is different from the protruding outwardly bent rims ("beak-shaped"), which are difficult to date (Lyonnet, *Prospections archéologiques en Bactriane orientale (1974–1978)*, 88–9).

⁵⁴Masson, *Drevnezemledel'českaâ Kul'tura Margiany*, 39–41; Kul'turogenez Drevnej Central'noj Azii, 120; Šajdullaev, "Untersuchungen zur frühen Eisenzeit in Nordbaktrien," 311; Lhuillier et al., "The Middle Iron Age in Ulug depe," 14.

⁵⁵Lyonnet's typology: F1-4 and F1-5; Lyonnet, *Prospections archéologiques en Bactriane orientale (1974–1978)*, 89–91, 111–2, table 14; Cattani and Genito, "The Pottery Chronological Seriation of the Murghab Delta": table 6/9–11; Šajdullaev, *Severnaâ Baktriâ v epohy rannego železnogo veka*, 103; "Untersuchungen zur frühen Eisenzeit in Nordbaktrien," 323; Lhuillier et al., "The Middle Iron Age in Ulug depe," 14–16.

⁵⁶Pilipko, "Rannij železnyj vek Èteka (ùžnyj Turkmenistan)," 9; "Raskopki na Hyrly-depe," 61–79; Lyonnet, *Prospections archéologiques en Bactriane orientale (1974–1978)*, 89–91, pl. 29/1–6; Cattani and Genito, "The Pottery Chronological Seriation of the Murghab Delta," 76.

⁵⁷The characteristic feature of the jars, which could be observed in their upper part, is the position of the wall below the rim. It is bent inwards and then outwards. The lateral surface of the rim is flattened (potentially with a pinch). The upper surface of the rim is pointed or rounded. In the recently developed Yaz IIB (Kuchuk III) phase, the flattening of the rim can be very pronounced, and the position of the walls in the upper part is less evident, but the recess below the rim is always present. This form is also referred to as "manchette-shaped" (Šajdullaev, *Severnaâ Baktriâ v epohy rannego železnogo veka*, 103; "Untersuchungen zur frühen Eisenzeit in Nordbaktrien," 323).

⁵⁸Masson, *Drevnezemledel'českaâ Kul'tura Margiany*, 41; Pilipko, "Rannij železnyj vek Èteka (ùžnyj Turkmenistan)," 10; Lyonnet, *Prospections archéologiques en Bactriane orientale (1974–1978)*, 91–3; Šajdullaev, *Severnaâ Baktriâ v epohy rannego železnogo veka*, 94, 105; "Untersuchungen zur frühen Eisenzeit in Nordbaktrien," 316, 325; Mokrobodov and Xin, "The Investigations of the Uzbekistan-American Expedition," 91.

⁵⁹Šajdullaev, *Severnaâ Baktriâ v epohy rannego železnogo veka*, 94, 105; "Untersuchungen zur frühen Eisenzeit in Nordbaktrien," 316, 325.

⁶⁰Pilipko, "Rannij železnyj vek Èteka (ùžnyj Turkmenistan)," 10, pl. 4/5,9,19; "Raskopki na Hyrly-depe," 78; Šajdullaev, *Severnaâ Baktriâ v epohy rannego železnogo veka*, 94, 105; "Untersuchungen zur frühen Eisenzeit in Nordbaktrien," 316, 325.

⁶¹Lyonnet, *Prospections archéologiques en Bactriane orientale (1974–1978)*, 91–3.

vessels or vases/beakers.⁶² A number of scholars agree that the absence of carination in the mentioned vessels is also connected to Yaz III pottery.⁶³ It should be noted, however, that the cylindrical vessels described are usually not found complete in the survey material.

3. The Iron Age settlement in the Serakhs oasis

As mentioned above, previous archaeological studies on the Yaz period conducted in the Serakhs oasis⁶⁴ were very limited. Until the recent research only five sites with Iron Age pottery were identified – Old Serakhs,⁶⁵ Baş-depe,⁶⁶ Akja gala,⁶⁷ Mowlek-depe⁶⁸ and Oyukly-depe.⁶⁹ The recent survey revealed 16 new sites that are dated mostly to the Yaz II–III periods (Figure 2). The sites differ in size as well as in the amount of collected pottery (Tables 1–6).

Although the collected material is limited, a preliminary reconstruction of the settlement pattern can be achieved. It is possible to distinguish three groups of sites, which are linked with different irrigation canals (Figure 2). The first group of sites is connected with the Kichi-aga-yap canal, which divides into several long branches slightly north of Old Serakhs. One of the most important results achieved here is the discovery of a large concentration of sites in the north-eastern part of the oasis, far from the main settlements of the historical period. The group consists of 12 sites: Oyukly-depe in an area measuring c. 8.1 ha, and 11 smaller sites – Ara-depe, Atsyz-depe D-1–D-6, Goşa-depe, Gumly-depe, Mowlek-depe and Şor-depe. Examination of the pottery indicates that most of the sites (Figures 3–5, Tables 2–4) – except for Atsyz-depe D-5 and Goşa-depe (Figure 4, Table 3) – were possibly occupied to the same extent during the Yaz II and III periods. In contrast Atsyz-depe D-5 can be dated mostly to the Yaz III period. Yaz I painted pottery was found only at Goşa-depe, which is also dated to the Yaz II period. It is unclear whether this site was also settled in the Yaz

III period as the quantity of distinctive pottery is too small. The quantity of sites dating to the Yaz periods in this area could be even larger, because we were not able to date some of the sites identified during the surveys due to the very small amounts of pottery and a lack of any diagnostic fragments. Sometimes only rare pieces of carination were present. The dating of such sites will be confirmed in later studies.

The second group, comprising Akja gala, Old Serakhs, Togolak-depe and Topaz gala, was discovered at the southern part of the Kichi-aga-yap irrigation system. The presence of Yaz period pottery at the eastern branch of this irrigation system (Togolak-depe and Topaz gala) is a little surprising, since there are no other known Iron Age sites in this area.⁷⁰ The quantity of pottery found in Old Serakhs during excavations conducted in the late 1950s does not enable us to improve its dating, nor does the quantity of ceramics collected at Akja gala (Figure 6, Table 5). Most of the pottery collected at Topaz gala could be dated to Yaz II, but some Yaz I fragments were unearthed during the excavations.⁷¹ The field survey indicates Yaz III vessels as well (Figure 6, Table 5). On the other hand, Togolak-depe can be dated to both Yaz II and Yaz III (Figure 6, Table 5).

The third group is located in the western part of the oasis in the vicinity of the branches of the Ata-yap canal, which starts about 5 km south of Old Serakhs. This group consists of five sites: Baş-depe, Beýikli gala, Soltan-depe, Nazar-depe and Gammar-depe (Figure 7, Table 6). The amount of Iron Age pottery collected here is small, but this could be due to the size of the sites and the presence of later deposits. It must be emphasised, however, that Gammar-depe (Figure 7, Table 6) can be mainly dated to Yaz III and Nazar-depe to Yaz II and Yaz III (Figure 7, Table 6). Unfortunately, the study of Baş-depe, which is situated in an area bordering Iran, is not possible at present.

The archaeological material collected during the survey conducted by the Polish team in the Serakhs oasis

⁶² Marušenko, "El'ken-depe (Otčët o raskopkah 1953, 1955 i 1956 gg.)," 68; Pilipko, "Poselenie ranneželeznogo veka Garry-Kâriz I," 56; "Raskopki na Hyrly-depe," 78; Şajdullaev, *Severnaâ Baktriâ v epohy rannego železnogo veka*, 94, 105; "Untersuchungen zur frühen Eisenzeit in Nordbaktrien," 316, 325; Masson, *Kul'turogenez Drevnej Central'noj Azii*, 120.

⁶³ Marušenko, "El'ken-depe (Otčët o raskopkah 1953, 1955 i 1956 gg.)," 68; Pilipko, "Poselenie ranneželeznogo veka Garry-Kâriz I," 56; "Raskopki na Hyrly-depe," 78; Masson, *Kul'turogenez Drevnej Central'noj Azii*, 120.

⁶⁴ Marušenko, "Staryj Serahs (Otčët o raskopkah 1953 g.)," 173–97; Orazov, *Arheologičeskie i arhitekturnye*, 19, 30–52.

⁶⁵ A.A. Marušenko mentions that from the remains of Yaz I–III in two trenches, a comparison with published pottery makes it possible to identify it as Yaz II–III assemblages. Examples of painted pottery have not been published. There are no published examples of pottery from the lowest arbitrary layer (–11.9 to –11.5 m); see Marušenko, "Staryj Serahs (Otčët o raskopkah 1953 g.)," 173–6, 196–8, pls. 16–18 (upper rows); O. Orazov did not publish any Yaz I–III pottery from the site (Orazov, *Arheologičeskie i arhitekturnye*, 37–41, 95).

⁶⁶ Marušenko, "Staryj Serahs (Otčët o raskopkah 1953 g.)," 197; Orazov, *Arheologičeskie i arhitekturnye*, 51, 95.

⁶⁷ Marušenko, "Staryj Serahs (Otčët o raskopkah 1953 g.)," 197; Orazov, *Arheologičeskie i arhitekturnye*, 44–5, 95.

⁶⁸ The site known as Mavlyak-depe (most probably Mowlek-depe) was discovered by K.A. Adykov, as Masson informs us (*Drevnezemledel'českaâ Kul'tura Margiany*, 50; see also Mowlek Tepe: Adykov, "Glavnye stancii na srednevekovom trgovom" fig. 1). Mowlek-depe was also mentioned by Orazov (*Arheologičeskie i arhitekturnye*, 45–6, 95). The location of this site in both descriptions is similar: almost 40 or 45 km from Serakhs near the road to Merv.

⁶⁹ Pilipko, "Kompleks keramiki ahemenidskogo," 95–8, pls. 1–3.

⁷⁰ Kaim, "The Parthian settlements in the Serakhs oasis," 131.

⁷¹ Wagner, "Early Iron Age in the Sarakhs Oasis," 171–2.

Table 1. List of the sites of Yaz I–III periods.

Site name	GPS coordinates		Size (ha)	Height (m)	Other pottery material
	Latitude	Longitude			
Akja gala	36.57681	61.24747	0.7	5.2	Partho-Sasanian, Islamic
Ara-depe	36.78682	61.27688	0.3	5	Islamic
Atsyz-depe D-1	36.75891	61.26044	0.13	2	Unknown
Atsyz-depe D-2	36.79446	61.26281	0.6	4	Early Islamic
Atsyz-depe D-3	36.78868	61.26635	0.5	3	Early Islamic
Atsyz-depe D-4	36.75707	61.25866	0.1	2	Unknown
Atsyz-depe D-5	36.79777	61.30300	0.4	3.4	–
Atsyz-depe D-6	36.75924	61.25234	0.35	2.5	Unknown
Baş-depe	36.65248	61.16294	0.8	1.5–2	Unknown
Bejikli gala	36.62719	61.20953	0.5	11	AD 10th–13th, 14th–18th c.
Gammar-depe	36.69242	61.19236	0.3	3.8	Partho-Sasanian
Goşa-depe	36.83769	61.25717	0.64	4	Early Islamic
Gumly-depe	36.83438	61.29631	0.4	3.2	–
Mowlek-depe	36.83212	61.27247	0.7	2	Unknown
Nazar-depe	36.68699	61.19932	1.3	3.6	Partho-Sasanian
Old Serakhs	36.51763	61.23479	120	21.36	Settled until AD 1832
Oyukly-depe	36.81217	61.31319	8.1	7.4	–
Soltan-depe	35.65538	61.20312	0.3	3.4	Partho-Sasanian
Şor-depe	36.74013	61.23276	0.4	2.5	Early Islamic
Togolak-depe	36.57971	61.27966	0.25	6.4	Partho-Sasanian
Topaz gala	36.60583	61.30365	0.34	3.2	Early Islamic, Late Islamic

has provided an insight into the main issues that concern the archaeological studies of prehistoric periods in this region. Firstly, all currently identified Yaz culture sites are located along two irrigation canals or lateral canals extending from them, which may suggest that only Ata-yap and Kichi-aga-yap functioned during this period. But the presence of Yaz I pottery was confirmed only along the Kichi-aga-yap canal, in both the northern and southern parts of the oasis. The settled area increased in the following periods, which is indicated by the number of Yaz II and Yaz III sites. And the fact that there was no settlement of Hellenistic, Parthian or Sasanian periods at the sites of the northern group, suggests a significant reduction of the irrigation system after the decline of Yaz culture. It is not clear, however, whether the presence of early Islamic pottery at some of the sites in this group indicates the rebuilding of the irrigation network to its previous size or whether these are the remains of seasonal short-term settlement. Today it is possible to observe families that move in the spring to uncultivated areas, settling there for a short while, and returning to the village in winter. Even a first glance at the map of Yaz period sites leads to the conclusion that field survey has not yet revealed all the settlements of the relevant period; indeed, it seems certain that other sites existed between Old Serakhs and Atsyz-depe D-1, 4, 6, and Şor-depe. There are several possible reasons for their non-discovery:

(1) Most of the central part of the oasis, especially until the fall of the Soviet Union, was intensively used for

the cultivation of cotton. The lowest sites, inhabited for a relatively short period of time, may have been destroyed. During our surface studies, conducted before harvesting, it was not possible to walk through the cultivated fields to search for scattered pottery.

- (2) The alluvial deposits in much of the Serakhs oasis are several metres deep, and potentially an impediment to archaeological discovery. In the north where the alluvium is less thick and the cultivation less intensive, the sites are easier to locate.
- (3) At many sites, located in the central part of the oasis, settlement lasting for a long period of time was identified, from the Late Parthian until the Islamic period. There is therefore a possibility that the earliest archaeological material may have been completely covered by later occupation. As the analysis of the ceramics from individual sites shows, the availability of Iron Age vessels is small, whereas the later material is significantly predominant. This was well observed in the case of Old Serakhs, where the layers of Yaz I, II, and III were discovered at a depth of 9.3–11.9 m below the surface in a trench at Shahristan (the lower city).⁷² The presence of Yaz II and III pottery was noted in survey on the north-western slope of the wall of the lower city,⁷³ but Yaz I painted pottery was not found in the surface material. The same circumstances might apply to many others sites located in the Serakhs oasis, especially those that have not been seriously

⁷²Marušenko, "Staryj Serahs (Otčet o raskopkah 1953 g.)," 173–5.

⁷³Marušenko, "Staryj Serahs (Otčet o raskopkah 1953 g.)," 171.

Table 2. Description of the pottery from Ara-depe (ARA), Atsyz-depe D-2 (ATD2) and Atsyz-depe D-3 (ATD3).

ID no.	Temper	Diam.	Ware colour	Exterior colour	Type	Analogies and references	Dating
Ara-depe							
ARA/1/2	Medium	38	5YR 6/8	5Y 6/3 or F1-3/2	Cylindrical jar	Lyonnet 1997: 88–89, 91–92, 111–12, table 14 (types: F1-3/2 – Phases I, II, III ^{rare} ; F1-6/2 – Phases II ^{rare} –III); Marušenko 1956: pl. 16, second from left – Old Serakhs (11.5–10.8 – Anau IV, Yaz II–III), Turkmenistan; Pilipko 2005: fig. 6/4 (Khyrly II, Yaz II), figs. 14/8, 17 (Khyrly IV, Yaz III) – Khyrly-depe, Turkmenistan.	Yaz II–III
ARA/1/3	Fine	15	7.5YR 7/4	5YR 6/4	Cylindrical truncated cone bowl or beaker	Lyonnet 1997: 95–97, 111–12, table 14 (types: o3-2, o3-3 – Phases I, II, III?), fig. 32/3 – Ai Khanum 111, layer 4B, Afghanistan; Cattani and Genito 1998: pl. 6/8 (Yaz II), Turkmenistan; Sverčkov and Boroffka 2007: fig.11/2,4,5 – Bektepa (layer 1, Yaz III), Uzbekistan.	Yaz II–III
ARA/1/4	Medium	29	5YR 6/6–7.5YR 7/6	10YR 7/4	Cylindrical jar	Lyonnet 1997: 88–89, 91–92, 111–12, table 14 (types: F1-3/2 – Phases I, II, III ^{rare} ; F1-6/2 – Phases II ^{rare} , III), fig. 28/5 (F1-3/2) – Kokcha 413/5 c, Afghanistan. Cattani and Genito 1998: pl. 9/1 (Yaz III), Turkmenistan; Šajdullaev 2002: Abb. 27/9 – Talashkantepe (Kučuk III–IV), Uzbekistan.	Yaz III
ARA/E/2/1	Fine	17	2.5YR 6/8	2.5YR 8/4; 7.5YR 7/4	Small ovoid or cylindrical jar	Lyonnet 1997: 86, 88–89, 111–12, table 14 (types: F1-1/2 – Phase III?, F1-3/2 – Phases I, II, III ^{rare}), fig. 27/3 (F1-1/2) – Archi 24, Afghanistan; Sverčkov and Boroffka 2007: fig. 21/10 – Bektepa (layer 5, Yaz II), Uzbekistan; Pilipko 2005: fig. 4/19, 20 – Khyrly-depe (Etek II), Turkmenistan.	Yaz II–III
Atsyz-depe D-2							
ATD2/1/1	Fine	44	2.5YR 7/6	10YR 7/3	Large cylindrical jar	Lyonnet 1997: 89–90, 92–93, 111–12, table 14 (types: F1-4 – Phase II, III ^{rare} ; F1-6/3 – Phases I ^{rare} , II, III); Pilipko 1985: pl. I/17 – Chopli-depe (VII BC), Turkmenistan; Boucharlat et al. 2005: fig. 15/ 02.ch11.11000-8 – Ulug-depe (Yaz II–III citadel, late layers), Turkmenistan.	Yaz II–III
ATD2/1/3	Fine	16	5YR 6/6–2.5Y 8/3	2.5Y 8/3	Deep hemispherical bowl or cylindrical beaker	Lyonnet 1997: 95–97, 111–12, table 14 (types: o3-2 – Phases I, II, III?; o3-3 – Phases I, II, III); Masson 1959: pl. 38/4 – Yaz-depe (Yaz II), Turkmenistan; Sverčkov and Boroffka 2007: fig. 12/3–4 – Bektepa, floor 2 (Yaz III), fig. 21/5 – Bektepa, layer 5 (Yaz II), Uzbekistan.	Yaz II–III
ATD2/E/2/2	Fine	27	2.5Y 8/2–5YR 7/6	2.5Y 8/2	Cylindrical or oblique jar	Lyonnet 1997: 88–89, 91–92, 111–12, table 14 (types: F1-3/2 – Phases I, II, III ^{rare} ; F1-6/2 – Phases II ^{rare} , III); Marušenko 1956: pl. 16/ second from left (–11.5–10.8 m), pl. 18/ second row, second from right (–10.8–8.85 m) (Yaz II–III) – Old Serakhs, Turkmenistan; Masson 1959: pl. 41/8 – Yaz-depe (Yaz III), Turkmenistan.	Yaz II–III
ATD2/E/2/3	Fine	27	10YR 8/2–5YR 6/6	10YR 8/2	Oblique jar or carinated bowl	Lyonnet 1997: 88–89, 111–12, table 14 (type: F1-3/2 – Phases I, II, III ^{rare}), fig. 28/6 – Rud-i Shahrawan 270, Afghanistan; Pilipko 1984: fig. 9/29 – Garry Kiariz I (Etek III), Turkmenistan; Vidale et al. 2008: fig. 12.33/no. 10145 (Yaz III) – Site 172, Murghab Delta, Turkmenistan.	Yaz I–III
ATD2/E/2/6	Fine	18	5YR 7/6	10YR 8/3	Cylindrical truncated cone bowl	Lyonnet 1997: 97, 111–12, table 14 (type: o3-3 – Phases I, II, III), fig. 32/8 – Ai Khanum 111, layer 4B, Afghanistan; Pilipko 1986: pl. 2/16 – Dashly-depe D-16, D-17 (Etek I), Turkmenistan; Sverčkov and Boroffka 2007: fig.14/ 8–10 – Bektepa (layer 3, Yaz III), Uzbekistan.	Yaz I–III
ATD2/N/1/1	Fine	17	7.5YR 7/4–2.5Y 8/2	2.5Y 8/2	Oblique or cylindrical jar	Lyonnet 1997: 86, 88–89, 111–12, table 14 (types: F1-1/2 – Phase III?; F1-3/2 – Phases I, II, III ^{rare});	Yaz I–III

(Continued)

Table 2. Continued.

ID no.	Temper	Diam.	Ware colour	Exterior colour	Type	Analogies and references	Dating
ATD2/N/1/2	Fine / Medium	46	5YR 6/6	5YR 6/6	Large cylindrical jar	Masimov 1982: fig. 5/24,25 – survey in Taip, Uch-depe, Aravali micro-oases (Yaz I–III), Turkmenistan; Durdyev 1959: pl. VIII/centre – Garry Kishman (Anau IV), Turkmenistan. Lyonnet 1997: 89, 111–12, table 14 (type: F1-3/3 – Phases I, II, III ^{rare}), fig. 28/8 – Kokcha 413, Afghanistan;	Yaz II
ATD2/S/3/5	Fine	4	2.5Y 7/8	10YR 8/2	Cylindrical beaker	Masson 1959: pl. 39/8,12 – Yaz-depe (Yaz II), Turkmenistan; Usmanova 1992: fig. 5/12 – Erk Qala (Yaz II), Turkmenistan. Lyonnet 1997: 95–97, 111–12, table 14 (type: o3-2 – Phases I, II, III?), fig. 32/5 – Asqalon 478, Afghanistan;	Yaz II–III
ATD2/W/4/1	Fine	19	2.5YR 6/6–2.5Y 7/3	2.5Y 7/3	Cylindrical jar	Pilipko 1986: pl. 3/12 – Dashly-depe D-16, D-17 (Etek II, 7th–6th BC), Turkmenistan; Boucharlat et al. 2005: fig. 15/02.CH11.11003-4 – Ulug-depe (Yaz II–III citadel, late layers), Turkmenistan; Venco Ricciardi 1980: fig. E/2 (Achaemenid) – Upper Atrek Valley, Iran. Lyonnet 1997: 89–90, 111, table 14 (type: F1-4 – Phases II, III ^{rare}), fig. 29/1 – Kalafgan 325, Afghanistan;	Yaz II
ATD2/W/4/4	Fine	29	2.5YR 7/6	5Y 8/2	Cylindrical jar	Pilipko 1986: pl. 2/1,2 – Dashly-depe D-30 (Etek I), Turkmenistan; Sverčkov and Boroffka 2007: fig. 22/ 2, 4, 7, 9 – Bektepa, layer 5 (Yaz II), Uzbekistan. Lyonnet 1997: 89–90, 111–12, table 14 (F1-3/3 – Phases I, II, III ^{rare} , F1-4 – Phase II, III ^{rare}); Usmanova 1992: fig. 5/5 – Erk Qala (Yaz II), Turkmenistan;	Yaz II–III
ATD2/W/4/6	Fine	17	7.5YR 7/6–2.5YR 7/6	7.5YR 7/6	Cylindrical jar	Pilipko 2005: fig. 8/19 (Etek II), fig. 10/17 (Etek II–III) – Khyrly-depe Turkmenistan. Lyonnet 1997: 89–90, 111, table 14 (type: F1-4 – Phases II, III ^{rare}); Pilipko 1986: pl. 2/6 – Dashly-depe D-30 (Etek I), Turkmenistan; Askarov and Al'baum 1979: pl. 11/21 – Kučuktepe (Kučuk II), Uzbekistan.	Yaz II
Atsyz-depe D-3							
ATD3/N/4/4	Medium	25	5YR 7/6	2.5Y 8/3	Cylindrical jar	Lyonnet 1997: 92–93, 111–12, table 14 (type: F1-6/3 – Phases I ^{rare} , II, III); Pumpelly 1908: 146/fig. 207 – Anau-depe (Anau IV), Turkmenistan; Vorob'eva 1959: fig. 2/19 – Kiuzeli-Gyr (Yaz II–III), Turkmenistan.	Yaz II–III
ATD3/no num.	Fine	25	2.5YR 6/6–10YR 7/3	10YR 7/3	Cylindrical jar	Lyonnet 1997: 90–91, 111, table 14 (type: F1-5 – Phases II, III ^{rare}), fig. 29/5 – Ai Khanum section of canal 3, Afghanistan;	Yaz II
ATD3/S/3/3	Medium	23	7.5YR 7/6	2.5Y 7/4	Hemispherical bowl	Sagdullaev 1980: fig. 3/top row left – Kyzylcha 6 (VII–VI BC), Uzbekistan. Lyonnet 1997: 94, 111–12, table 14 (type: o2 – Phases II–III), fig. 31/6 – Taluqan 234, Afghanistan;	Yaz I–III
ATD3/S/3/5	Fine	12	7.5YR 7/6	7.5YR 7/4	Small carinated bowl with pointed rim	Bonora and Vidale 2008: fig. 11.11/7 (Yaz I) – Site no. 999 in the Murghab Delta (Yaz I), Turkmenistan; Vorob'eva 1959: fig. 4/6 – Kiuzeli-Gyr (Yaz II–III), Turkmenistan. Boucharlat et al. 2005: fig. 15/03.CH8.8151-3 – Ulug-depe (Yaz II–III citadel, late layers), Turkmenistan;	Yaz II–III
ATD3/W/5/1	Medium	22	10YR 7/4	2.5Y 8/2	Hemispherical bowl	Masson 1959: pl. 39/19 (Yaz II), pl. 41/20 (Yaz III) – Yaz-depe, Turkmenistan; Pilipko 1984: fig. 11/14 – Garry Kiariz I (Yaz III), Turkmenistan; Vahdati 2016: fig. 5/L – Jeyran Tepe (late Iron Age), Iran. Cattani and Genito 1998: pl. 5/3 (Yaz I), Turkmenistan; Bonora and Vidale 2008: figs. 11.9/2, 11.14/2 – Site no. 999 in the Murghab Delta (Yaz I), Turkmenistan;	Yaz I–II
ATD3/W/5/4	Fine	15	7.5YR 7/6	2.5Y 8/2	Cylindrical beaker	Pilipko 1986: pl. 3/23 – Dashly 16–17 (Etek II, 7th–6th BC), Turkmenistan. Lyonnet 1997: 94–97, 111–12, table 14 (types: o3-1, o3-2 – Phases I, II, III?), fig. 32/3 – Ai Khanum 111, layer 3B, Afghanistan;	Yaz II–III
ATD3/W/5/7	Fine	12	5Y 8/3	10YR 8/3		Marušenko 1959: pl. 26/4 – El'ken-depe (El'ken III; 6th–4th BC), Turkmenistan; Cattani and Genito 1998: pl. 8/7 (Yaz III), Turkmenistan.	

Table 3. Description of the pottery from Atsyz-depe D-5 (ATD5), Goşa-depe (GSD1, GSD2), Gumly-depe (GU) and Mowlek-depe (MK).

ID no.	Temper	Diam.	Ware colour	Exterior colour	Type	Analogies and references	Dating
Atsyz-depe D-5							
ATD5/E/1/1	Fine	11	7.5YR 7/4	2.5Y 7/4	Cylindrical beaker	Lyonnet 1997: 94–97, 111–12, table 14 (types: o3-1, o3-2 – Phases I, II, III?), fig. 32/3 – Ai Khanum 111, layer 3B, Afghanistan; Cattani and Genito 1998: pl. 8/7 (Yaz III), Turkmenistan; Masson 1959: pl. 37/18 (Yaz II), pl. 42/1, 7 (Yaz III) – Yaz–depe, Turkmenistan.	Yaz II–III
ATD5/E/1/2	Fine	12	7.5YR 7/4	7.5YR 7/4	Small cylindrical truncated cone or hemispherical bowl/cup	Lyonnet 1997: 97, 111–12, table 14 (type: o3-3 – Phases I, II, III); Pilipko 1986: pl. 2/12,13,24 – Dashly-depe D-30 (Etek I), Turkmenistan; Sverčkov and Boroffka 2007: fig.18/3–4 – Bektepa (Yaz II), Uzbekistan.	Yaz I–III
ATD5/E/1/3	Fine	11	5YR 6/6–2.5Y 7/4	10YR 7/6	Cylindrical beaker	Lyonnet 1997: 94–97, 111–12, table 14 (types: o3-1, o3-2 – Phases I, II, III?), fig. 32/3 – Ai Khanum 111, layer 3B, Afghanistan; Cattani and Genito 1998: pl. 8/7 (Yaz III), Turkmenistan; Masson 1959: pl. 37/18 (Yaz II), pl. 42/1,7 (Yaz III) – Yaz-depe, Turkmenistan.	Yaz II–III
ATD5/E/1/6	Fine	11	5YR 7/6	5Y 8/4		Cattani and Genito 1998: pl. 8/7 (Yaz III), Turkmenistan; Masson 1959: pl. 37/18 (Yaz II), pl. 42/1,7 (Yaz III) – Yaz-depe, Turkmenistan.	
ATD5/S/3/2	Medium	26	7.5YR 7/6	10YR 7/4	Cylindrical jar	Lyonnet 1997: 88–89, 111–12, table 14 (type F1–3/2 – Phases I, II, III ^{are}); Cattani and Genito 1998: pl. 9/2 (Yaz III), Turkmenistan; Sverčkov and Boroffka 2007: fig. 28/1,11 – Kindyktepa (Yaz III), Uzbekistan.	Yaz II–III
ATD5/W/4/1	Medium	32	5YR 6/6	2.5Y 8/3	Cylindrical jar	Lyonnet 1997: 92–93, 111–12, table 14 (type: F1-6/2 – Phase II ^{are} , III), fig. 30/4 – Ai Khanum 111, layer 3B (Phase III), Afghanistan; Boucharlat et al. 2005: fig. 15/03.CH13.13011-1 – Ulug-depe (Yaz II–III citadel, late layers), Turkmenistan; Marušenko 1959: pl. 26/2 – El'ken-depe (Anau IV, El'ken III), Turkmenistan.	Yaz II–III
ATD5/W/4/2	Fine	19	5YR 6/6	2Y 8/3	Hemispherical or truncated cone bowl	Lyonnet 1997: 94, 111–12, table 14 (type: o2 – Phase II–III), fig. 31/6 – Taluqan 234, Afghanistan; Bonora and Vidale 2008: fig. 11.11/7 (Yaz I) – Site no. 999 in the Murghab Delta (Yaz I), Turkmenistan; Vorob'eva 1959: fig. 4/6 – Kiuzeli-Gyr (Yaz II–III), Turkmenistan.	Yaz I–III
ATD5/W/4/3	Fine	8	2.5Y 7/4	2.5Y 7/4	Cylindrical beaker (with a very low carination)	Lyonnet 1997: 94–95, 111–12, table 14 (type: o3-1 – Phases I, II, III?), fig. 32/2 – Kokcha 413/7 n, Afghanistan. Pilipko 2005: fig. 4/39 – Khyrly-depe (Khyrly I, Etek II), Turkmenistan; Boucharlat et al. 2005: fig. 15/03.CH11.11003-4 – Ulug-depe (Yaz II–III citadel, late layers), Turkmenistan.	Yaz II–III
Goşa-depe							
GSD1/14/4	Medium/coarse (chamotte particles)	19,4	2.5YR 6/6	(eroded) 10YR 6/6 10R 5/6 Painted decoration: 7.5R 4/4	Globular bowl or pot	Masimov 1982: fig. 3/19 – survey in Taip, Uch-depe, Aravali micro-oases (Yaz I), Turkmenistan; Masson 1959: pl. 29/4 (Yaz I) – Yaz-depe, Turkmenistan; Sarianidi 1989: pl. 30.10 (Yaz I) – Tillya-tepe, Afghanistan.	Yaz I
GSD2/14/1	Fine	29,4	2.5YR 7/6	10YR 8/3	Cylindrical or globular jar	Pilipko 2005: fig. 4/19, 20 (Khyrly II; Yaz II–III) – Khyrly-depe, Turkmenistan; Pilipko 2000: fig.3/5 (Yaz II–III) – Oyukly-depe, Turkmenistan; Masimov 1982: fig. 5/25 – survey in Taip, Uch-depe, Aravali micro-oases (Yaz I–III), Turkmenistan.	Yaz I–III

(Continued)

Table 3. Continued.

ID no.	Temper	Diam.	Ware colour	Exterior colour	Type	Analogies and references	Dating
GSD2/14/3	Fine	34,3	2.5YR 7/6	10YR 8/3	Carinated bowl	Pilipko 2000: fig. 2/5 (Yaz II/III) – Oyukly-depe, Turkmenistan; Úsupov 1978: fig. 2/39 (Yaz II/III) – Chommek-depe, Turkmenistan; Sverčkov and Boroffka 2007: fig. 13/8 (Yaz III) – Bektepa, Uzbekistan.	Yaz II–III
GSD2/14/18	Medium/coarse (chamotte particles)	14,5	7.5YR 7/6	7.5YR 7/4 Painted decoration: 7,5YR 4/1	Globular bowl or pot	Gutlyev 1977: fig. 4/11, 35 (Yaz I) – Yassy-depe, Turkmenistan; Masson 1959: pl. 17/6, 11, pl. 19/5 (Yaz I) – Yaz-depe, Turkmenistan; Bonora and Vidale 2008: fig. 11.21/4 – Site no. 999 (Yaz I) in Merv oasis, Turkmenistan.	Yaz I
Gumly-depe GU/N/1/1	Fine	12	5YR 6/6	5Y 8/2	Cylindrical beaker	Lyonnet 1997: 94–97, 111–12, table 14 (types: o3-1, o3-2 – Phases I, II, III?), fig. 32/3 – Ai Khanum 111, layer 3B, Afghanistan; Marušenko 1959: pl. 27/4 – El'ken-depe (El'ken III; 6th–4th c. BC), Turkmenistan; Cattani and Genito 1998: pl. 8/7 (Yaz III), Turkmenistan.	Yaz II–III
GU/S/3/1	Medium	12	5YR 6/6	5Y 8/2	Cylindrical beaker or cylindrical truncated cone bowl	Lyonnet 1997: 94–97, 111–12, table 14 (types: o3-1, o3-2 – Phases I, II, III?, o3-3 – Phases I, II, III), fig. 32/3 – Ai Khanum 111, layer 3B, Afghanistan; Usmanova 1992: fig. 8/upper row, third from left – Erk Qala (Yaz III), Turkmenistan; Sverčkov and Boroffka 2007: fig. 18/8 – Bektepa (Yaz II), Uzbekistan.	Yaz II–III
GU/S/3/2	Medium	20	5YR 6/6–10YR 7/4	5YR 6/6	Sub-cylindrical or oblique jar	Lyonnet 1997: 88–89, 91–92, 111–12, table 14 (types: F1-3/2 – Phases I, II, III ^{rare} , F1-6/2 – Phase II ^{rare} , III); Marušenko 1956: pl. 16/second from left (–11.5–10.8 m), pl. 18/second row, second from right (–10.8–8.85 m) (Yaz II–III) – Old Serakhs, Turkmenistan; Masson 1959: pl. 41/8 – Yaz-depe (Yaz III), Turkmenistan.	Yaz II–III
GU/S/3/3	Fine	24	5YR 6/6	5YR 6/6–2.5Y 8/3	Hemispherical bowl	Lyonnet 1997: 94, 97, 111–12, table 14 (types: o2 – Phases II, III, o3-3 – Phases I, II, III?); Cattani and Genito 1998: pl. 5/2 (Yaz I), Turkmenistan; Pilipko 1986: pl. 3/18 – Dashly-depe D-16, D-17 (Etek II – 7th–6th c. BC), Turkmenistan.	Yaz I–III
GU/W/4/1	Medium	26	5YR 7/6–10YR 7/4	10YR 7/4	Carinated bowl	Lyonnet 1997: table 14 (type: F1-3/2 – Phases I, II, III ^{rare}), fig. 28/3 – Yangi Qala 544, Afghanistan; Cattani and Genito 1998: pl. 5/1 (Yaz I), Turkmenistan; Masson 1959: pl. 39/9 – Yaz-depe (Yaz II), Turkmenistan.	Yaz I–III
GU/W/4/2	Medium	21	5YR 7/6–5YR 6/6 –5YR 7/ 6	5YR 7/4	Cylindrical jar	Lyonnet 1997: 90–91, 111, table 14 (type: F1-5 – Phases II, III ^{rare}), fig. 29/3 – Kalafgan 325, Afghanistan; Pilipko 1985: pl. 1/16, 18 – Chopli-depe, Turkmenistan; Sverčkov and Boroffka 2007: fig. 22/ 2,4,7,9 – Bektepa (layer 5, Yaz II), Uzbekistan.	Yaz II
GU/W/4/4	Fine	17	5YR 6/6–10YR 8/4	2.5Y 8/2	Cylindrical truncated cone bowl	Lyonnet 1997: 97, 111–12, table 14 (type: o3-3 – Phases I, II, III); Cattani and Genito 1998: pl. 6/7 (Yaz II), Turkmenistan; Sverčkov and Boroffka 2007: fig. 27/5 – Kindyktepa, layer 2 (Yaz III), Uzbekistan.	Yaz II–III
GU/W/4/5	Fine	20	5YR 6/6	5Y 8/2	Cylindrical jar	Lyonnet 1997: 89–90, 111–12, table 14 (F1-3/3 – Phase I, II, III ^{rare} , F1-4 – Phase II, III ^{rare}); Masson 1959: pl. 43/5 – Takhirbai-depe (Yaz II–III), Turkmenistan; Pilipko 2005: fig. 8/19 (Etek II), fig. 10/17 (Etek II–III) – Khyrly-depe, Turkmenistan.	Yaz I–III
GU/W/4/6	Medium	13	5YR 6/6	2.5Y 8/3	Cylindrical beaker	Lyonnet 1997: 94–97, 111–12, table 14 (types: o3-1, o3-2 – Phases I, II, III?); Pilipko 1986: pl. 3/12 – Dashly-depe D-16, D-17 (Etek II), Turkmenistan; Masson 1959: pl. 39/7 – Yaz-depe (Yaz II), Turkmenistan, pl. 44 – Afrasiab (Afrasiab I, Yaz III), Uzbekistan.	Yaz II–III

Mowlek-depe						
MK/2012/1	Medium	35	2.5YR 7/6	2.5YR 8/3	Cylindrical jar	Lyonnet 1997: 89–91, 111, table 14 (types: F1-4, F1-5 – Phases II, III ^{fare}), fig. 29/3 – Kalafgan 325, Afghanistan; Yaz II Šajdullaev 2002: Abb. 9/21 – Kučuktepe (Kučuk II), Uzbekistan;
MK/2012/2	Fine	9	2.5YR 7/6	2.5YR 8/2	Cylindrical beaker or small cylindrical bowl or cup	Pilipko 1985: pl. 1/16, 18 – Chopli-depe, Turkmenistan. Yaz I–III Lyonnet 1997: 94–97, 111–12, table 14 (types: o3-1, o3-2 – Phases I, II, III?, o3-3 – Phases I, II, III); Sverčkov and Boroffka 2007: fig. 18/1, 3–4 – Bektepa (layer 4, Yaz II), Uzbekistan;
MK/2012/3	Fine	9	2.5YR 7/6	2.5YR 8/3	Cylindrical beaker or small cylindrical bowl or cup	Masson 1959: pl. 42/2 – Yaz-depe (Yaz III), Turkmenistan. Yaz I–III Lyonnet 1997: 94–97, 111–12, table 14 (types: o3-1, o3-2 – Phases I, II, III?, o3-3 – Phases I, II, III);
MK/2012/4	Fine	11–16	5YR 7/6	2.5YR 8/3	Cylindrical beaker	Šajdullaev 2002: Abb. 3/14 – Kučuktepe (Kučuk IA), Abb. 49/6 – Talashkantepe I (Kučuk III–IV), Uzbekistan; Yaz II–III Masson 1959: pl. 39/23 – Yaz-depe (Yaz II), Turkmenistan. Lyonnet 1997: 94–97, 111–12, table 14 (types: o3-1, o3-2 – Phases I, II, III?); Boucharlat et al. 2005: fig. 17/03.CH10.10083-2 – Ulug-depe, early layers of the citadel (Yaz II–III), Turkmenistan;
MK/2012/5	Fine	20	2.5YR 7/6	2.5YR 8/3	Hemispherical bowl	Cattani and Genito 1998: pl. 8/7 (Yaz III), Turkmenistan; Yaz I–III Venco Ricciardi 1980: fig. E/5 (Achaemenid) – Upper Atrek Valley, Iran. Lyonnet 1997: 94, 97, 111–12, table 14 (types: o2 – Phases II, III, o3-3 – Phases I, II, III); Cattani and Genito 1998: pl. 5/2 (Yaz I), Turkmenistan; Pilipko 1986: pl. 3/18 – Dashly-depe D-16, D-17 (Etek II, 7th–6th c. BC), Turkmenistan.

Table 4. Description of the pottery from Oyukly-depe (OLY) and Şor-depe (SZ).

ID no.	Temper	Diam.	Ware colour	Exterior colour	Type	Analogies and references	Dating
Oyukly-depe OLY/E/2/3	Fine	15	10YR 7/6–5YR 6/6	2.5Y 8/3	Deep hemispherical bowl	Lyonnet 1997: 97, 111–12, table 14 (type: o3-3 – Phases I, II, III), fig. 32/8 – Ai Khanum 111, Afghanistan; Vidale et al. 2008: fig. 12.34/no.10049 – Site nr 172 (Yaz III), Murghab Delta, Turkmenistan; Usmanova 1992: fig. 8/ the upper left corner – Erk Qala (Yaz III), Turkmenistan.	Yaz I–III
OLY/N/1/2	Medium	9	5YR 6/6	10YR 7/3	Very small carinated bowl/ carinated cup	Boucharlat et al. 2005: fig. 15/03.CH8.8151-3 – Ulug-depe, late layers of the citadel (Yaz II–III), Turkmenistan; Usmanova 1992: fig. 7/6 – Erk Qala (IV–III BC), Turkmenistan; Cattani and Genito 1998: pl. 8/1 (Yaz III), Turkmenistan; Vahdati 2016: fig. 5/L – Jeyran Tepe (late Iron Age), Iran.	Yaz II–III
OLY/N/1/4	Fine	12	5YR 7/6	2.5YR 8/3	Cylindrical beaker	Lyonnet 1997: 94–97, 111, table 14 (type: o3-1, o3-2 – Phases I, II, III?), fig. 32/3 – Ai Khanum 111, Afghanistan; Cattani and Genito 1998: pl. 8/7 (Yaz III), Turkmenistan; Boucharlat et al. 2005: fig. 17/ 03.CH10.10083-2 Ulug-depe, early layers of the citadel (Yaz II–III), Turkmenistan;	Yaz II–III
OLY/N/1/5	Medium	37	7.5YR 7/6–7.5YR 8/4	5Y 8/3	Cylindrical jar	Venco Ricciardi 1980: fig. E/5 (Achaemenid) – Upper Atrek Valley, Iran. Lyonnet 1997: 91, 112, table 14 (type: F1-6/1 – Phase III), fig. 30/2 – Chashma Shir 400, Afghanistan; Boucharlat et al. 2005: fig. 17/03.CH10.10121-3 – Ulug-depe, late layers of the citadel (Yaz II–III), Turkmenistan;	Yaz III
OLY/SAT/5/2	Medium	51.5	5YR 6/6	2.5Y 8/3	Large cylindrical jar or basin	Sverčkov and Boroffka 2007: fig. 15/13 – Bektepa, floor 1, layer 3 (Yaz III), Uzbekistan. Cattani and Genito 1998: pl. 7/6 (Yaz III), Turkmenistan; Lyonnet 1997: 92–93, 111–12, table 14 (type: F1-6/3 – Phases I ^{are} , II, III), fig. 30/6 – Kokcha 413/6 c, Afghanistan.	Yaz II–III
OLY/SAT/5/5	Medium	35	5YR 6/6	2.5Y 7/3	Cylindrical jar	Lyonnet 1997: 87, 109, table 14 (type: F1-2 – Phase I); Pilipko 2005: fig. 5/1 – Khyrly-depe (Khyrly I, Yaz II), Turkmenistan; Sverčkov and Boroffka 2007: fig.16/12 – Bektepa (Yaz III), Uzbekistan.	Yaz I–III
OLY/SAT/5/13	Medium	31	10YR 7/4	2.5Y 8/3	Ovoid or cylindrical jar	Marušenko 1956: pl. 16/ in the centre (layer –11.5–10.8 m), pl. 18/upper right corner (layer –10.8–8.85) – Old Serakhs (Anau IV, Yaz II–III), Turkmenistan; Lyonnet 1997: 88–90, 111–12, table 14 (types: F1-4 – Phases II, III ^{are} , F1-3/2 – Phases I, II, III ^{are}), fig. 29/2 – Rustaq 506 – wall, Afghanistan; Şajdullaev 2002: Abb. 10/6 – Kučuktepe (Kučuk III), Uzbekistan.	Yaz II–III
OLY/SAT/5/15	Medium	12	5YR 7/6	2.5YR 8/2	Cylindrical beaker or pot	Lyonnet 1997: 95–96, 111, table 14 (type: o3-2 – Phases I, II, III?), fig. 32/4 – Ai Khanum 111, layer 4B, Afghanistan; Cattani and Genito 1998: pl. 6/8 (Yaz II), pl. 8/6 (Yaz III), Turkmenistan; Usmanova 1992: fig. 8/ the upper left corner – Erk Qala (Yaz III), Turkmenistan.	Yaz II–III
OLY/SAT/5/40	Medium	29	7.5YR 7/4	2.5Y 8/3	Cylindrical jar	Lyonnet 1997: 91–93, 112, table 14 (types: F1-6/1 – Phase III, F1-6/2 – Phases II ^{are} , III), fig. 30/4 – Ai Khanum 111, Afghanistan; Genito 1998: figs. 4/8779, 5/2 – Site 215 (Yaz III), Murghab Delta, Turkmenistan; Boucharlat et al. 2005: fig. 15/03.CH13.13011-1 – Ulug-depe, late layers of the citadel (Yaz II–III), Turkmenistan.	Yaz III
OLY/SAT/5/42	Medium	34	10YR 8/3–5YR 7/8	2.5Y 7/4	Carinated bowl	Lyonnet 1997: fig. 28/7: 89, 111–12, table 14 (type: F1-3/3 – Phases I, II, III ^{are}), fig. 28/7 – Ai Khanum Ville Royale, Afghanistan; Cattani and Genito 1998: pl. 5/1 (Yaz I), pl. 6/2 (Yaz II), pl. 7/2, 3 (Yaz III), Turkmenistan; Sverčkov and Boroffka 2007: fig. 13/8 – Bektepa, floor 2 (Yaz III), Uzbekistan.	Yaz I–III
OLY/SAT/5/47	Medium	19	2.5Y8/3 - 5YR6/6 - 2.5Y8/3	2.5Y8/3	Cylindrical jar	Lyonnet 1997: 87, 109, table 14 (type: F1-2 – Phase I), fig. 27/4 – Asqalon 487, Afghanistan; Pilipko 2005: fig. 5/1 – Khyrly-depe (Khyrly I, Yaz II), Turkmenistan; Sverčkov and Boroffka 2007: fig. 16/12 – Bektepa (Yaz III), Uzbekistan.	Yaz I–III
OLY/SAT/5/57	Medium	26	10YR6/6	10YR7/4	Cylindrical jar	Marušenko 1959: pl. 27/3 – El'ken-depe (El'ken III; 6th–4th c. BC), Turkmenistan; Pilipko 1984: fig. 8/ 14 – Garry Kiariz I (Etek III), Turkmenistan;	Yaz III

OLY/SAT/5/58	Medium	35	5YR 6/6	2.5Y 7/3	Truncated-cone bowl	Durdyev 1959: pl. 8/in upper right corner – Garry Kishman (Anau IV), Turkmenistan. Lyonnet 1997: 93–94, 111–12, table 14 (type: O1-1 – Phases I?, II, III), fig. 31/3 – Bangi 355, Afghanistan; Boucharlat et al. 2005: fig. 17/10039-1 – Ulug-depe, early layers of the citadel (Yaz II–III); Cattani and Genito 1998: pl. 7/5 (Yaz III), pl. 8/5 (Yaz III), Turkmenistan.	Yaz II–III
Şor-depe SZ/14/3	Fine	16	7,5YR 7/6	7,5YR 7/6	Cylindrical beaker	Marušenko 1959: pl. 26/4 – El'ken-depe (El'ken III; 6th–4th c. BC), Turkmenistan; Masson 1959: pl. 42/1, 7 – Yaz-depe (Yaz III period), Turkmenistan; Cattani and Genito 1998: pl. 8/7 (Yaz III), Turkmenistan; Lyonnet 1997: fig. 32/3 – Ai Khanum 111, layer 3B, Afghanistan; Sverčkov and Boroffka 2007: fig. 12/7–8 – Bektepa (Yaz III), Uzbekistan.	Yaz II–III
SZ/14/7	Medium-fine	12	5YR 6/6	10YR 8/4	Truncated-cone bowl, beaker or small jar	Usmanova 1992: fig. 8/upper row, left – Erk Qala (4th–3rd c. BC), Turkmenistan; Úsupov 1978: fig. 2/36 (Yaz II/III) – Chommek-depe, Turkmenistan; Nemceva 1969: fig. 4/65 – Afrasiab (5th–4th c. BC), Uzbekistan; Venco Ricciardi 1980: fig. E/6 (Achaemenid) – Upper Atrek Valley, Iran; Vahdati 2016: fig. 5/n – Jeyran Tepe (Late Iron Age), Iran.	Yaz II–III
SZ/15/1	Fine	36	5YR 6/6	10YR 8/4	Cylindrical jar	Marušenko 1959: pl. 26/1 – El'ken-depe (El'ken III), Turkmenistan; Sverčkov and Boroffka 2007: fig. 15/13 – Bektepa, floor 1, layer 3 (Yaz III), Uzbekistan; Lyonnet 1997: 91, 112, table 14 (type: F1-6/1 – Phase III), fig. 30/2 – Chashma Shir 400, Afghanistan.	Yaz III
SZ/15/2	Medium	4	10YR 6/6	10YR 8/2	Cylindrical beaker	Lyonnet 1997: 95–97, 111–12, table 14 (type: o3-2 – Phases I, II, III?), fig. 32/5 – Asqalon 478, Afghanistan; Pilipko 1986: pl. 3/12 – Dashly-depe D-16, D-17 (Etek II - VII–VI BC), Turkmenistan; Boucharlat et al. 2005: fig. 15/02.CH11.11003-4 - Ulug-depe (Yaz II–III citadel, late layers), Turkmenistan.	Yaz II–III
SZ/15/3	Fine	24	5YR 6/6	10YR 8/2	Cylindrical jar or pot	Pilipko 2005: fig. 4/19, 20 (Khyrly II; Yaz II–III) – Khyrly-depe, Turkmenistan; Pilipko 2000: fig. 3/5 (Yaz II–III) – Oyukly-depe, Turkmenistan; Masimov 1982: fig. 5/25 – survey in Taip, Uch-depe, Aravali micro-oases (Yaz I–III), Turkmenistan.	Yaz II–III
SZ/15/9	Fine without visible inclusions	16	7,5YR 7/6	10YR 7/6	Cylindrical beaker	Marušenko 1959: pl. 26/4 – El'ken-depe (El'ken III; VI–IV BC), Turkmenistan; Masson 1959: pl. 42/1, 7 – Yaz-depe (Yaz III period), Turkmenistan; Cattani and Genito 1998: pl. 8/7 (Yaz III), Turkmenistan; Lyonnet 1997: fig. 32/3 – Ai Khanum 111, layer 3B, Afghanistan; Sverčkov and Boroffka 2007: fig. 12/7–8 – Bektepa (Yaz III), Uzbekistan.	Yaz II–III

Table 5. Description of the pottery from Akja gala (AG), Togolak-depe (TG) and Topaz gala (TP, TZ'08).

ID no.	Temper	Diam.	Ware colour	Exterior colour	Type	Analogies and references	Dating
Akja gala							
AG/E/6/2	Fine	37	5YR 6/8	2.5Y 8/2	Cylindrical jar	Lyonnet 1997: 88–88, 91–92, 111–12, table 14 (types: F1-3/2 – Phases I, II, III ^{rare} , F1-6/2 – Phases II ^{rare} , III); Marušenko 1956: pl. 16/second from left (–11.5–10.8 m), pl. 18/second row, second from right (–10.8–8.85 m) (Yaz II–III) Old Serakhs, Turkmenistan; Masson 1959: pl. 41/8 – Yaz-depe (Yaz III), Turkmenistan.	Yaz II–III
Togolak-depe							
TG/E/3/1	Fine	37	5YR 7/6	10YR 8/2	Cylindrical jar	Lyonnet 1997: 89–91, 111–12, table 14 (types: F1-3/3 – Phase I, II, III ^{rare} , F1-5 – Phases II, III ^{rare}), fig. 28/8 – Kokcha 413, Afghanistan; Usmanova 1992: fig. 5/2 – Erk Qala (Yaz II), Turkmenistan; Šajdullaev 2002: Abb. 9/6 – Kučuktepe (Kučuk II), Uzbekistan.	Yaz II–III
TG/E/3/5	Fine	13	10YR 7/3	10YR 7/3	Cylindrical beaker	Lyonnet 1997: 94–97, 111–12, table 14 (types: o3-1, o3-2 – Phases I, II, III?); Cattani and Genito 1998: pl. 6/8 (Yaz II), pl. 8/7 (Yaz III); Boucharlat et al. 2005: fig. 17/03.CH10.10083-2 – Ulug-depe (Yaz II–III, citadel – early layers), Turkmenistan.	Yaz II–III
TG/N/5/1	Fine	48	5YR 6/6	10YR 8/2	Cylindrical jar	Lyonnet 1997: 92–93, 111–12, table 14 (type: F1-6/2 – Phases II ^{rare} , III), fig. 30/4 – Ai Khanum 111, layer 3B, Afghanistan; Boucharlat et al. 2005: fig. 15/03.CH13.13011-1 – Ulug-depe (Yaz II–III citadel, late layers), Turkmenistan;	Yaz II–III
TG/N/5/5	Fine	45	7.5R 7/6	10YR 8/2	Cylindrical jar	Pilipko 1986: pl. 4/9 – Dashly-depe D-3 (Etek III), Turkmenistan. Lyonnet 1997: 88, 109–12, table 14 (type: F1-3/2 – Phase I, II, III ^{rare}); Marušenko 1956: pl. 16/second from left (–11.5–10.8 m), pl. 18/second row, second from right (–10.8–8.85 m) (Yaz II–III) Old Serakhs, Turkmenistan;	Yaz II–III
TG/W/2/4	Fine	14	5YR 7/6	10YR 8/2	Cylindrical beaker	Vidale et al. 2008: fig. 12.33/no. 10150 (Yaz III) – Site 172, Murghab Delta, Turkmenistan. Lyonnet 1997: 94–97, 111–12, table 14 (types: o3-1, o3-2 – Phase I, II, III?); Cattani and Genito 1998: pl. 6/8 (Yaz II), pl. 8/7 (Yaz III); Boucharlat et al. 2005: fig. 17/03.CH10.10083-2 – Ulug-depe (Yaz II–III, citadel – early layers), Turkmenistan.	Yaz II–III
Topaz gala							
TP/NE/1/2	Fine	37	5YR 6/6	2.5Y 8/3	Hemispherical or carinated bowl	Lyonnet 1997: 88, 109–12, table 14 (type: F1-3/2 – Phase I, II, III ^{rare}); Sverčkov and Boroffka 2007: fig. 18/14 – Bektepa (Yaz II), Uzbekistan;	Yaz II
TP/NW/2/3	Fine	21	7.5YR 7/6– 2.5YR 6/8	2.5Y 8/3	Cylindrical jar	Šajdullaev 2002: Abb. 8/18 – Kučuktepe (Kučuk IB), Uzbekistan. Lyonnet 1997: 89–90, 111, table 14 (type: F1-4 – Phases II, III ^{rare}), fig. 29/3 – Kalafgan 325, Afghanistan; Pilipko 1985: pl. 1/16 – Chopli-depe (VII BC), Turkmenistan;	Yaz II
TP/NW/2/4	Fine	22	5YR6/6	2.5Y 8/2	Cylindrical jar	Sverčkov and Boroffka 2007: fig. 13/8 – Bektepa (Yaz II), Uzbekistan. Lyonnet 1997: 89–90, 111, table 14 (type: F1-4 – Phases II, III ^{rare}); Cattani and Genito 1998: pl. 5/4 (Yaz I), Turkmenistan;	Yaz I–II
TP/SE/3/2	Fine	36	2.5YR 6/8	5Y 8/2	Large carinated bowl	Sverčkov and Boroffka 2007: fig. 22/7, 9 – Bektepa (Yaz II), Uzbekistan. Lyonnet 1997: 89–90, 92–93, 111–12, table 14 (type: F1-4 – Phases II, III ^{rare} , F1-6/3 – Phase I ^{rare} , II, III); Pilipko 2005: fig. 6/22 – Khyrly-depe (Khyrly I–II, Yaz II), Turkmenistan;	Yaz II–III
TP/SE/3/3	Fine	27	2.5YR 6/8	10YR 8/2	Cylindrical bowl	Boucharlat et al. 2005: fig. 16/03.CH10.10121-3 – Ulug-depe, citadel, late layers (Yaz II–III), Turkmenistan. Lyonnet 1997: 97–98, 111–12, table 14 (types: o3-3 – Phases I, II, III, o3-4 – Phases II?, III), fig. 32/7 (o3-3) – Kalafgan 322, fig. 32/9 (o3-4) – Asqalon 487, Afghanistan; Masson 1959: pl. 37/9,14, pl. 40/7,14 – Yaz-depe (Yaz II), Turkmenistan; Sverčkov and Boroffka 2007: fig. 14/7 (Yaz III), fig. 18/6–8 – Bektepa (Yaz II–III mixed material), Uzbekistan.	Yaz I–III

TP/SE/3/5	Fine	13	2.5Y 8/3–5YR 6/6	2.5Y 8/3	Small cylindrical or hemispherical bowl/cup	Lyonnet 1997: 97, 111–12, table 14 (type: o3-3 – Phases I, II, III); Pilipko 1986: pl. 2/12,24 – Dashly-depe D-30 (Etek I), Turkmenistan; Sverčkov and Boroffka 2007: fig. 18/3–4 – Bektepa (Yaz II), Uzbekistan.	Yaz I–III
TZ'08/1/1	Fine	22	7.5YR 7/6–5YR 6/6	2.5Y 8/3	Cylindrical jar	Lyonnet 1997: 89–90, 111–12, table 14 (F1-3/3 – Phases I, II, III ^{rare} , F1-4 – Phase II, III ^{rare}), fig. 28/7 – Ai Khanum Ville Royale, Afghanistan; Pilipko 2005: fig. 10/11 (Khyrly 2–3, Yaz II–III), fig. 13/19 (Khyrly 3, Yaz III) – Khyrly-depe, Turkmenistan; Vorob'eva 1973: fig. 5b/1 – Dingil'dže vicinity (6th–5th c. BC), Uzbekistan.	Yaz II–III
TZ'08/1/2	Fine	25.5	7.5YR 7/6	2.5Y 8/2	Cylindrical jar	Lyonnet 1997: 91–92, 111–12, table 14 (F1-6/2 – Phase II ^{rare} , III), fig. 30/5 – Rud-i Shahrawan 266, Afghanistan; Marušenko 1959: pl. 27/3 – El'ken-depe (El'ken III), Turkmenistan; Durdyev 1959: pl. 8/upper right corner – Garry Kishman (Anau IV), Turkmenistan.	Yaz III
TZ'08/1/5	Fine	27	5YR 7/6	10YR 8/3	Cylindrical jar	Lyonnet 1997: 94, 97, 109–12, table 14 (types: F1-2 – Phase I, F1-3/3 – Phases I, II, III ^{rare}); Usmanova 1992: fig. 7/13 – Erk Qala (4th–3rd c. BC), Turkmenistan; Pilipko 2005: fig. 5/1 – Khyrly-depe (Khyrly I, Yaz II), Turkmenistan.	Yaz I–III
TZ'08/1/10	Fine	39.5	2.5Y 8/2–5YR 7/6	2.5Y 8/2	Cylindrical jar	Lyonnet 1997: 89–90, 109–12, table 14 (types: F1-3/3 – Phases I, II, III ^{rare} , F1-4 – Phase II, III ^{rare}); Pilipko 2005: fig. 6/2 (Khyrly 1–2 – Etek II), fig. 11/2 (Khyrly 3 – Etek III) – Khyrly-depe, Turkmenistan; Šajdullaev 2002: Abb. 7/23 – Kučuktepe (Kučuk II), Uzbekistan.	Yaz I–III
TZ'08/1/32	Fine/ Medium	22.5	2.5YR 7/6– 2.5Y 8/2	2.5Y 8/2	Cylindrical truncated cone bowl	Lyonnet 1997: 88, 97, 111–12, table 14 (types: F1-3/1 – Phases I, II, III ^{rare} , o3-3 – Phases I, II, III); Cattani and Genito 1998: pl. 6/7 (Yaz II), Turkmenistan; Sverčkov and Boroffka 2007: fig. 18/11 (Yaz II–III mixed layer) – Bektepa, fig. 28/15 – Kindyktepa (Yaz III), Uzbekistan.	Yaz II–III

Table 6. Description of the pottery from Nazar-depe (NZ), Gammar-depe (GM), Soltan-depe (ST) and Beyikli gala (BY).

ID no.	Temper	Diam.	Ware colour	Exterior colour	Type	Analogies and references	Dating
Nazar-depe							
NZ/1/4	Fine	11	2.5YR 6/8	7.5YR 7/4	Small cylindrical or globular jar	Lyonnet 1997: 86, 112, table 14 (type: F1-1/2 – Phase III ?), fig. 27/3 – Archi 24, Afghanistan; Usmanova 1992: fig. 7/18 – Erk Qala, Turkmenistan (4th–3rd c. BC), Turkmenistan; Sverčkov and Boroffka 2007: fig. 28/11 – Kindyktepa, 1 floor (Yaz III), Uzbekistan; Vahdati 2016: fig. 5/m – Jeyran Tepe (Late Iron Age), Iran.	Yaz III
NZ/1/6	Fine	24	2.5YR 6/8	2.5Y 7/3	Cylindrical jar	Lyonnet 1997: 91, 112, table 14 (type: F1-6/1 – Phase III); Marušenko 1959: pl. 26/3 – El'ken-depe (El'ken III), Turkmenistan; Usmanova 1992: fig. 7/2 – Erk Qala, Turkmenistan (4th–3rd c. BC).	Yaz III
NZ/2011/19	Fine	33	5YR 6/6	2.5Y 8/4	Cylindrical jar	Lyonnet 1997: 89, 109–12, table 14 (type: F1-3/3 – Phases I, II, III ^{rare}); Masson 1959: pl. 43/9 – Takhirbai-depe (Yaz II–III), Turkmenistan; Sverčkov and Boroffka 2007: fig. 20/5 (layer 4 – Yaz II–III mixed material), fig. 22/3 (layer 5 – Yaz III) – Bektepa, Uzbekistan.	Yaz II–III
NZ/2011/21	Fine	22	5YR 7/6	2.5Y 8/3	Small globular jar/ hemispherical or carinated bowl	Lyonnet 1997: 86, 88–89; 109–12, table 14 (types: F1-1/2 – Phase III?, F1-3/2 – Phases I, II, III ^{rare}), fig. 27/3 – Archi 24, Afghanistan; Cattani and Genito 1998: pl. 6/4 (Yaz II), pl. 8/3 (Yaz III), Turkmenistan; Pilipko 1984: fig. 9/29 – Garry Kiariz I (Etek III), Turkmenistan.	Yaz I–III
NZ/2011/23	Fine	28	5YR 6/6	2.5Y 8/3	Carinated bowl or cylindrical jar	Lyonnet 1997: 89, 109–12, table 14 (type: F1-3/3 – Phases I, II, III ^{rare}), fig. 28/7 – Ai Khanum Ville Royale, Afghanistan; Masson 1959: pl. 39/12 – Yaz-depe (Yaz II), Turkmenistan; Šajdullaev 2002: Abb. 10/6 – Kučuktepe (Kučuk III), Uzbekistan.	Yaz II–III

(Continued)

Table 6. Continued.

ID no.	Temper	Diam.	Ware colour	Exterior colour	Type	Analogies and references	Dating
NZ/2011/24	Fine	29	5YR 6/6	7.5YR 6/4	Carinated bowl or cylindrical jar	Lyonnet 1997: 89, 109–12, table 14 (type: F1-3/3 – Phases I, II, III ^{rare}); Sverčkov and Boroffka 2007: fig. 16/13 – Bektepa, layer 3 (Yaz II), Uzbekistan;	Yaz II–III
NZ/2011/25	Fine	28	2.5YR 6/6– 10YR 7/4	10YR 7/3	Cylindrical jar	Masson 1959: pl. 43/5 – Takhirbai-depe (Yaz II–III), Turkmenistan. Lyonnet 1997: 88, 109–12, table 14 (type: F1-3/2 – Phases I, II, III ^{rare}); Šajdullaev 2002: Abb. 7/24 – Kučuktepe (Kučuk IB), Uzbekistan; Masimov 1982: fig. 5/24 – survey in Taip, Uch-depe, Aravali micro-oases (Yaz I–III), Turkmenistan.	Yaz I–III
Gammar-depe							
GM13/9	Fine	49	2.5YR 7/6	10YR 8/2	Cylindrical jar or basin	Lyonnet 1997: 91–92, 109–12, table 14 (types: F1-6/1 – Phase III, F1-6/3 – Phases I ^{rare} , II, III); Masson 1959: pl. 41/12, 42/8 – Yaz-depe (Yaz III), Turkmenistan;	Yaz III
GM/2011/15	Fine	32	5YR 7/6	2.5Y 7/3	Cylindrical jar	Cattani and Genito 1998: pl. 7/6 (Yaz III), Turkmenistan. Lyonnet 1997: 88, 109–12, table 14 (type: F1-3/2 – Phases I, II, III ^{rare}); Marušenko 1956: pl. 16/second from left (–11.5–10.8 m), pl. 18/second row, second from right (–10.8–8.85 m) (Yaz II–III) Old Serakhs, Turkmenistan;	Yaz II–III
GM/2011/16	Fine	30	5YR 7/6	10YR 7/4	Carinated bowl or cylindrical jar	Vidale et al. 2008: fig. 12.33/no. 10150 (Yaz III) – Site 172, Murghab Delta, Turkmenistan. Lyonnet 1997: 87–89, 109–12, table 14 (types: F1-2 – Phase I, F1-3/2 – Phases I, II, III ^{rare}); Masson 1959: pl. 38/9 – Yaz-depe (Yaz II), Turkmenistan;	Yaz I–III
Soltan-depe							
ST/1/6	Fine	45	7.5YR 8/4	2.5Y 8/2	Cylindrical jar or carinated basin	Masimov 1982: fig. 5/28 – survey in Taip, Uch-depe, Aravali micro-oases (Yaz I–III), Turkmenistan. Lyonnet 1997: 88–89, 111–12, table 14 (types: F1-3/2 – Phases I, II, III ^{rare} , F1-4 – Phases II, III ^{rare}); Rtveladze 1976: fig. 4/27 – Bandikhan-Tepe II (name changed to Bektepa), (lowest [IV] arbitrary cut – Yaz II), Uzbekistan;	Yaz I–III
ST/1/7	Fine	40	5YR 7/4	2.5Y 8/2	Cylindrical jar or carinated basin	Masson 1959: pl. 38/9 – Yaz-depe (Yaz II), Turkmenistan. Lyonnet 1997: 89–90, 111–12, table 14 (types: F1-3/3 – Phases I, II, III ^{rare} , F1-4 – Phases II, III ^{rare}), fig. 28/8 – Kokcha 413, Afghanistan; Sverčkov and Boroffka 2007: fig. 19/12 – Bektepa, Yaz II–III mixed layer, Uzbekistan;	Yaz I–III
Beyikli gala							
BY/E/5/16	Fine	26	2.5YR 6/6	2.5Y 7/3–7.5YR 7/4	Cylindrical jar or carinated bowl	Šajdullaev 2002: Abb. 9/6 (Kučuk IB), 10/1 – Kučuktepe (Kučuk III), Uzbekistan. Lyonnet 1997: 88–90, 111–12, table 14 (types: F1-3/2 – Phase I, II, III ^{rare} , F1-4 – Phases II, III ^{rare}); Askarov and Al'baum 1979: pl. 11/9 – Kučuktepe (Kučuk II), Uzbekistan;	Yaz I–III
						Masson 1959: pl. 38/9 – Yaz-depe (Yaz II), Turkmenistan.	

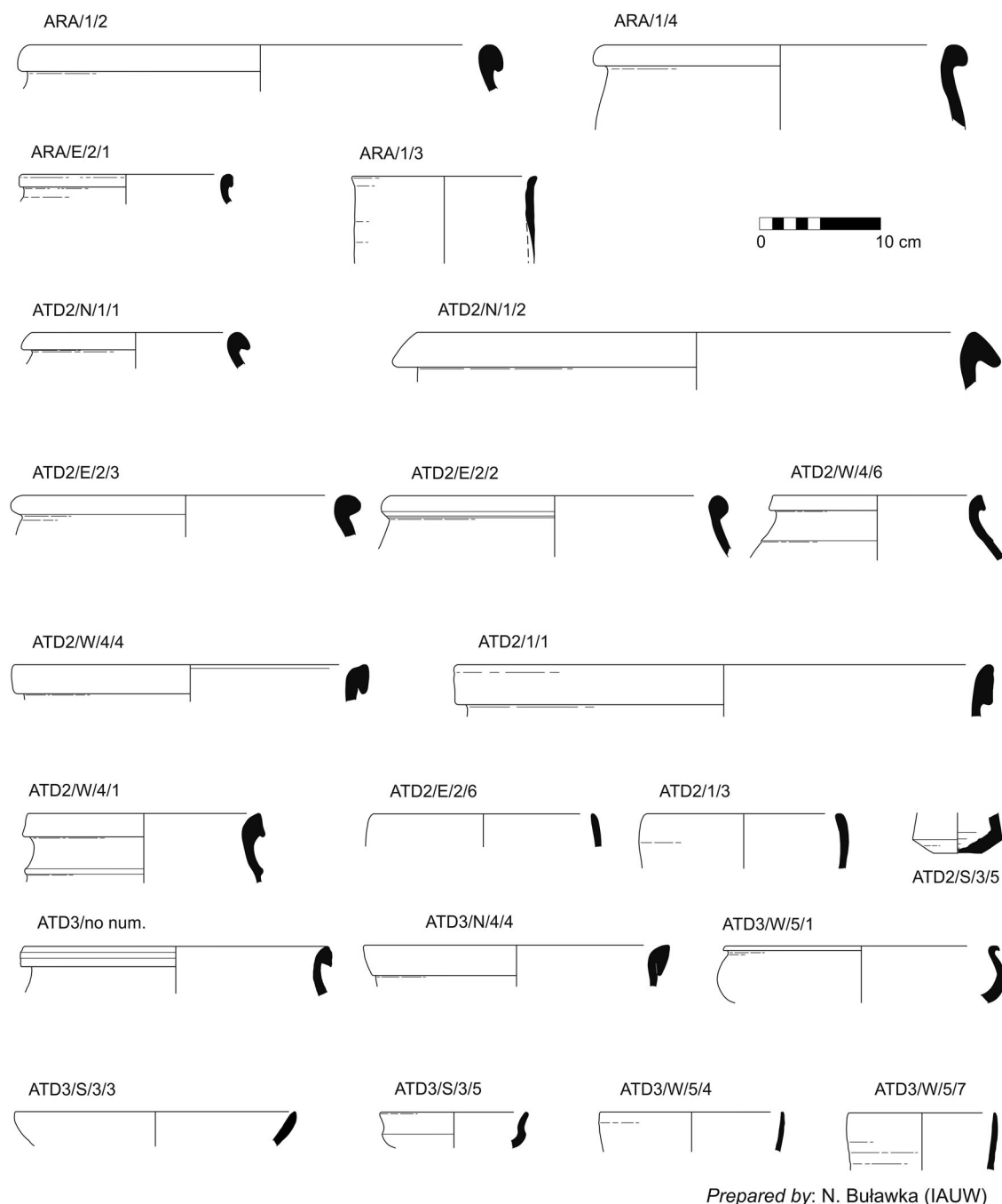


Figure 3. Pottery from Ara-depe (ARA), Atsyz-depe D-2 (ATD2) and Atsyz-depe D-3 (ATD3) located at the main branch of the Kichi-aga-yap canal in the Serakhs oasis.

damaged by erosion or human activity and opening test trenches could alter this situation.

- (4) A very important factor in some parts of the oasis is a large concentration of salt in the soil that crystallises on the surface of the mound, which may cause the destruction of pottery. This may also be the cause of a lack of diagnostic pottery

on the surface of some sites located in the northern part of the Kichi-aga-yap irrigation canal.⁷⁴

- (5) Another impediment to archaeological survey faced by our mission is the fact that it is now no longer possible to conduct research close to the border between Turkmenistan and Iran, thus leaving the

⁷⁴On the surface of such sites only small pieces of pottery were present.

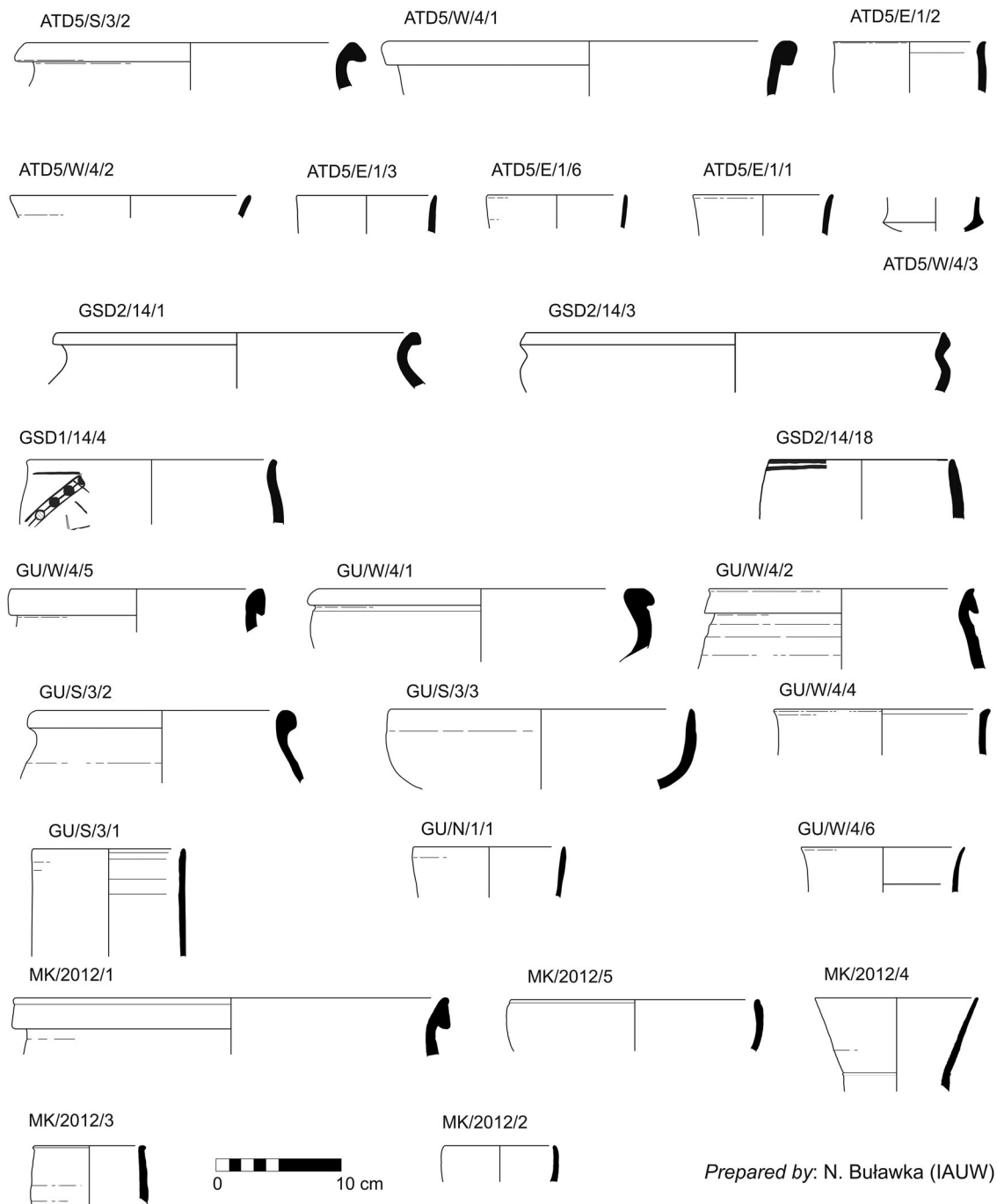


Figure 4. Pottery from Atsyz-depe D-5 (ATD5), Goşa-depe (GSD1, GSD2), Gumly-depe (GU) and Mowlek-depe (MK) located at the main branch of the Kichi-aga-yap canal in the Serakhs oasis.

settlement picture incomplete. Nevertheless, the current results of new research means that the Serakhs oasis is no longer a blank area on the settlement map of the Yaz period in Turkmenistan.

4. Conclusion

The results of archaeological studies in the Serakhs oasis indicate that the Iron Age settlement concentrated along

two irrigation canals. According to the current state of research, only one of them, Kichi-aga-yap, functioned in the Yaz I period. From the Yaz II period the settlement also included the Ata-yap canal. Most sites continued to exist up to the Yaz III period, but again the number of those settled in the Yaz III period is slightly larger. These phenomena were confirmed – with a greater degree of intensity – by recent studies in the Merv oasis. Compared to Yaz I the number of sites slightly

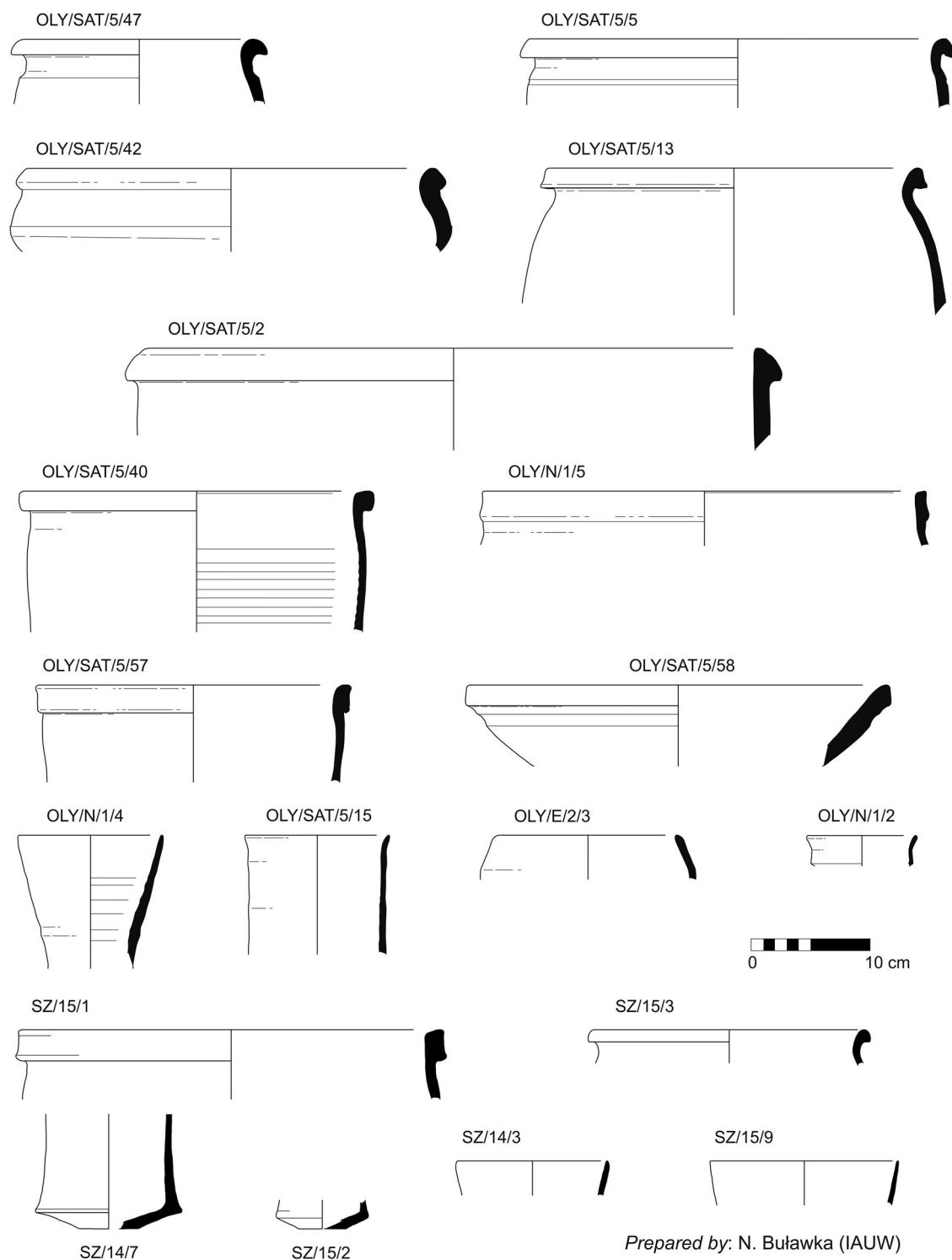


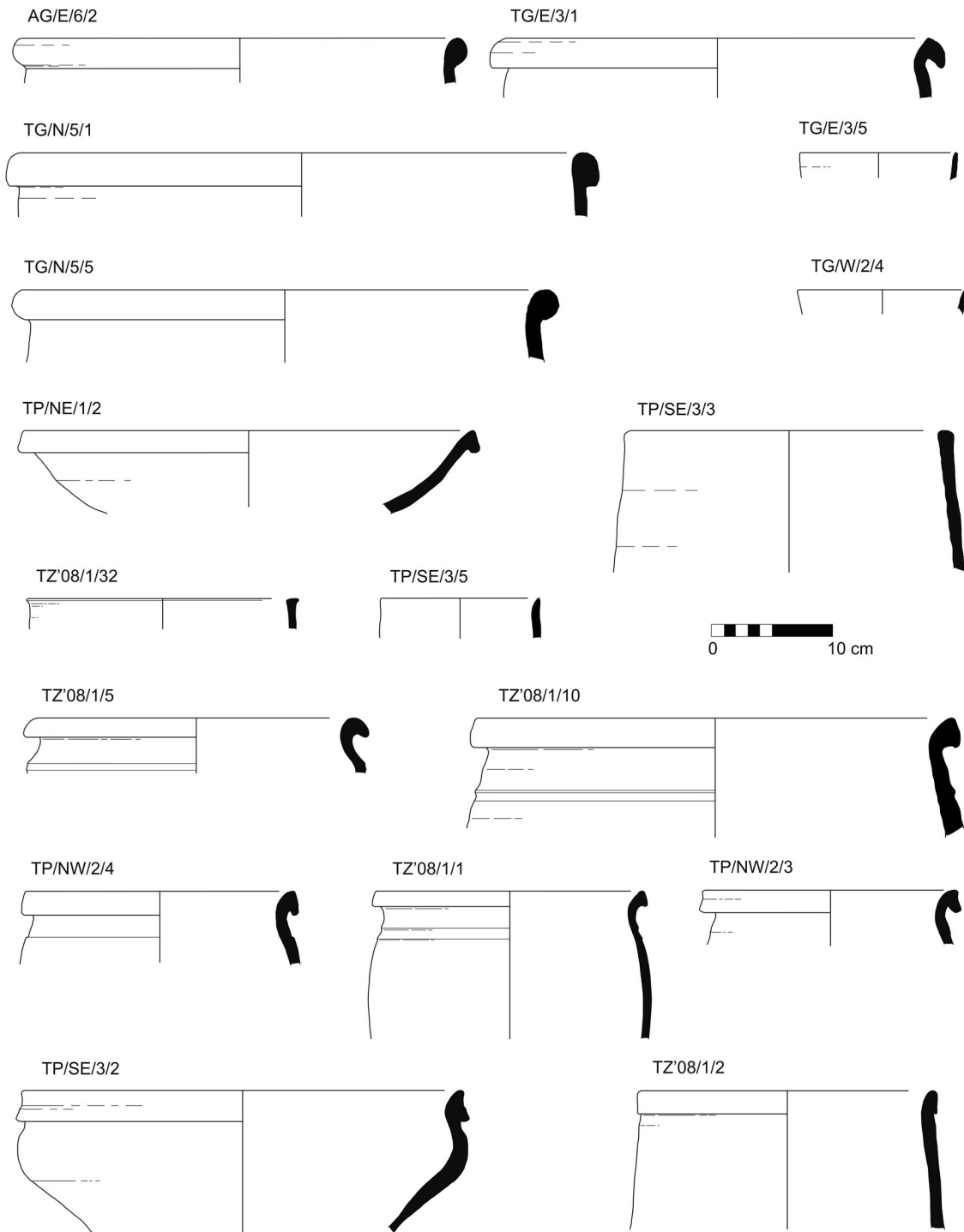
Figure 5. Pottery from Oyukly-depe (OLY) and Şor-depe (SZ) located at the main branch of the Kichi-aga-yap canal in the Serakhs oasis.

increases in Yaz II, and the area settled in Yaz III is twice as large as that settled in Yaz II or Yaz I.⁷⁵ According to Salvatori the Yaz III settlement pattern in the Merv oasis was also more organised than in the previous periods,

which is explained by its integration into a centralised system subject to Achaemenid rule and governed from Erk Qala.⁷⁶ Yaz III (late Iron Age) corresponds more or less to the period of Achaemenid domination,

⁷⁵Salvatori, "The Margiana settlement pattern from the Middle Bronze Age," fig. 5/18.

⁷⁶Salvatori, "The Margiana settlement pattern from the Middle Bronze Age," 71–2.



Prepared by: N. Buławka (IAUW)

Figure 6. Pottery from Akja gala (AG), Togolak-depe (TG) and Topaz gala (TP, TZ'08) located at the eastern branch of the Kichi-aga-yap canal in the Serakhs oasis.

and it is tempting to connect changes in the settlement system with centralised power. Insofar as the growth of settlement during the Middle Iron Age is

also observed in other areas of Central Asia,⁷⁷ Lyonnet's studies in north-eastern Afghanistan, which did not show significant changes in the number of sites

⁷⁷Lhuillier, *Le phénomène des "cultures à céramique modelée peinte" en Asie Centrale*, 453.

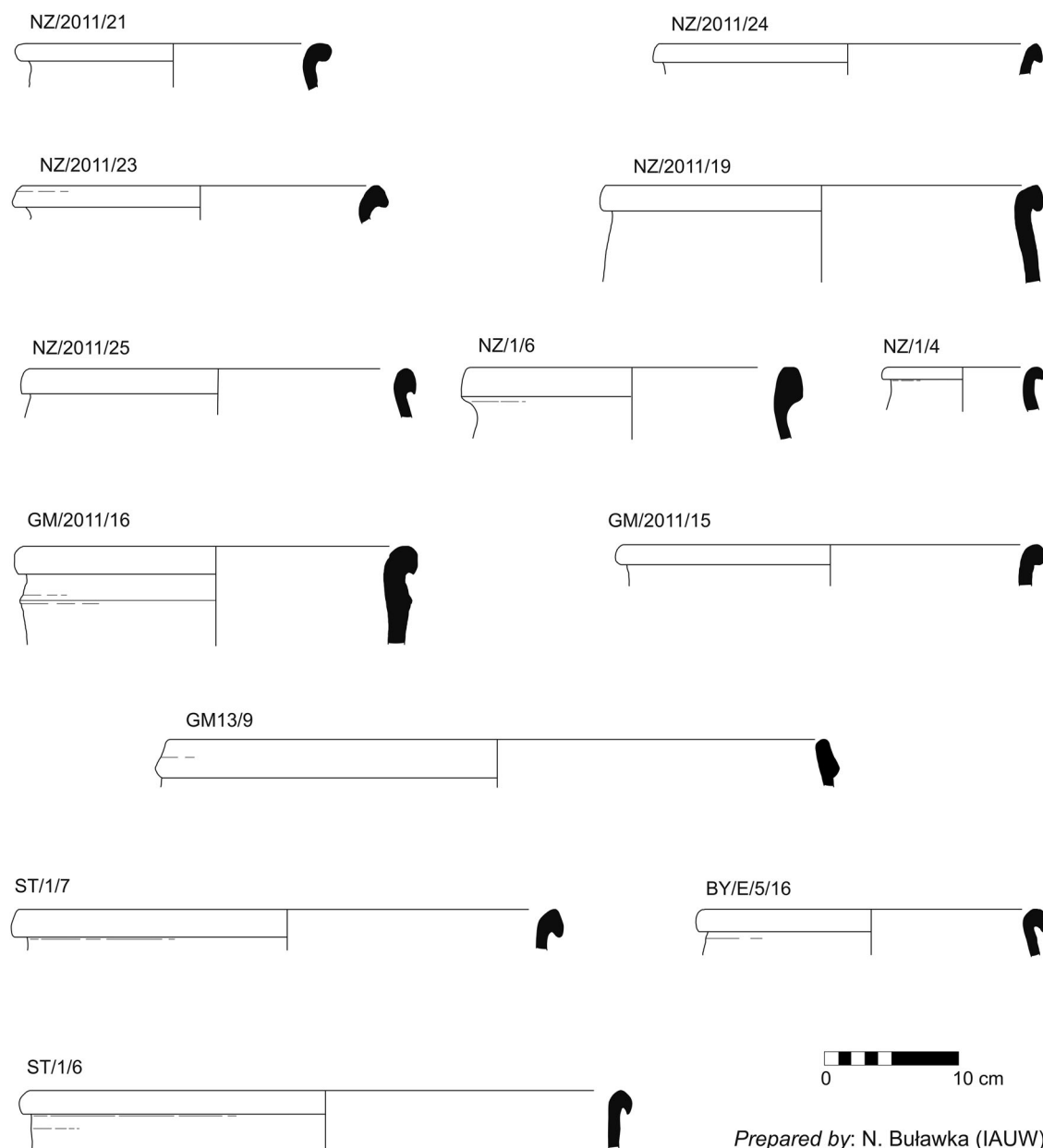


Figure 7. Pottery from Nazar-depe (NZ), Gammar-depe (GM), Soltan-depe (ST) and Beyikli gala (BY) located at the Ata-yap canal in the Serakhs oasis.

between phases II and III,⁷⁸ rather suggest local changes. In view of the proximity of the Serakhs and Merv oases and their comparable climatic conditions, similar settlement dynamics seem to be reasonable, but this issue certainly needs deeper investigation.

In north-eastern Iran, sites in the Upper Atrek Valley and in Sabzevar county reveal Central Asian Yaz II–III ceramic material,⁷⁹ which proves that the region was

within the sphere of Central Asian culture during the Iron Age. In the present state of research, however, it is not possible to compare the dynamics of the Iron Age settlement in north-eastern Iran with Central Asia.

After the Yaz periods the settled area in the Serakhs oasis decreased. As mentioned previously, no settlements of Hellenistic, Parthian or Sasanian periods were found in the northern part of the oasis.⁸⁰ The restriction of

⁷⁸Lyonnet, *Prospections archéologiques en Bactriane orientale (1974–1978)*, 110–2, tables XVI, 289.

⁷⁹Venco Ricciardi, "Archaeological Survey in the Upper Atrek Valley (Khorasan, Iran)," 58–162; Francfort et al., "Preliminary Report on the Soundings at Tepe Damghani Sabzevar," 130.

⁸⁰Kaim, "The Parthian settlements in the Serakhs oasis," 131–4.

the settled area to the upper part of the delta and an increase in population were observed,⁸¹ which may indicate a new settlement model based on intensively irrigated areas and the increasing importance of urban areas. A similar gradual phenomenon was observed in the Merv oasis from the Hellenistic to the Sasanian period. What is more, a general shift of settled area to the south-east was clearly observed here.⁸² We are possibly dealing with the same phenomenon in the Serakhs oasis, which is strengthened by the smaller size of the oasis, whereas the wasteland of the northern part of the delta would have been reclaimed by pastoralists. The restriction of a settled area around important cities and an increase in population was also observed in north-eastern Afghanistan⁸³ and the Upper Atrek Valley in Khorasan.⁸⁴

In sum, settlement analysis carried out in the Serakhs oasis indicates that the changes that have taken place here are equivalent to the settlement dynamics observed during the Iron Age in others regions of Central Asia, and in the Merv oasis in particular.

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Bibliography

Adykov, K. A. "Glavnye stancii na srednevekovom torgovom puti iz Serahsa v Merv (Po arheologičeskim dannym)." *Sov Arkh* 4 (1959): 212–27.

Adykov, K. A., and V. M. Masson. "Drevnosti Tedžen-Murgabskogo meždureč'â (k izučeniû arheologičeskikh pamâtnikov v zone 2-oj očeredi Karakumskogo kanala)." *Izvestiâ Akademii Nauk TSSR. Serii obščestvennyh nauk* 2 (1960): 58–66.

Askarov, A. A. "Raskopki Pšaktepa na ūge Uzbekistana." *Istoriâ Material'noj Kul'tury Uzbekistana* 17 (1982): 30–41.

Askarov, A. A. "Raspisnâ keramika Džar-Kutana." In *Baktrijskie Drevnosti. Predvaritel'nye soobšeniâ ob arheologičeskikh rabotah na ūge Uzbekistana*, edited by V. M. Masson, 17–19. Leningrad: Izdatel'stvo "NAUKA", Leningradskoe otdelenie, 1976.

Askarov, A. A., and L. I. Al'baum. *Poselenie Kučuk-tepe*. Tashkent: Izdatel'stvo "FAN" Uzbekskoj SSR, 1979.

Belâeva, T. V., and Z. A. Hakimov. "Drevnebaktrijskie pamâtniki Miršade." In *Iz istorii antičnoj kul'tury Uzbekistana*, edited by G. A. Pugačenkova, 35–51. Tashkent: Izdatel'stvo Literatury i Iskusstva im. Gafura Gulâma, 1973.

Bendezu-Sarmiento, J., and J. Lhuillier. "Iron Age in Turkmenistan: Ulug-depe in the Kopetdagh Piedmont." In *Historical and Cultural Sites of Turkmenistan: Discoveries, Researches and Restoration for 20 Years of Independence*, edited by M. Mamedov and R. Muradov, 238–49. Ashgabat: Türkmen döwlet nesiryat gullugy, 2011.

Bonora, G. L., and M. Vidale. "An Aspect of the Early Iron Age (Yaz I) Period in Margiana: Ceramic Production at Site No. 999." In *The Archaeological Map of the Murghab Delta. Studies and Reports. Vol. 2. The Bronze Age and Early Iron Age in the Margiana lowlands: Facts and Methodological Proposal for a Redefinition of the Research Strategies*, edited by S. Salvatori, M. Tosi, and B. Cerasetti, 153–93. Oxford: Archaeopress, 2008.

Boroffka, N. G. O., and L. M. Sverchkov. "The Jaz II and III Period Pottery. Classification and Chronology Viewed from Bandykhan, Southern Uzbekistan." In *Pottery and Chronology of the Early Iron Age in Central Asia*, edited by M. Wagner, 49–74. Warsaw: Akiku Graphics, 2013.

Boucharlat, R., H-P. Francfort, and O. Lecomte. "The Citadel of Ulug Depe and the Iron Age Archaeological Sequence in Southern Central Asia." *IA* 40 (2005): 479–514.

Boucharlat, R., H-P. Francfort, O. Lecomte, and M. Mamedov. "Recherches archéologiques récentes à Ulug Dépé (Turkménistan)." *Paléorient* 28, no. 2 (2002): 123–31.

Buławka, N. "Decorative Motifs of the Early Iron Age (Yaz I) Pottery in Southern Turkmenistan." *Światowit. Annual of the Institute of Archaeology of the University of Warsaw* 7 (49)/A, no. 2009–2010 (2011): 121–31.

Buławka, N., and B. Kaim. "The Iron Age in Serakhs Oasis (Turkmenistan). The Preliminary Results of the Application of Geographic Information System in the Study of the Settlement Pattern of the Earliest Confirmed Occupation of the Oasis." In *CAA2015. Keep The Revolution Going. Proceedings of the 43rd Annual Conference on Computer Applications and Quantitative Methods in Archaeology*, Vol. 2, edited by S. Campana, R. Scopigno, G. Carpentiero, and M. Cirillo, 791–801.

⁸¹Kaim, "The Parthian settlements in the Serakhs oasis," 134.

⁸²Salvatori, "The Margiana settlement pattern from the Middle Bronze Age," 71–3.

⁸³Lyonnet, *Prospections archéologiques en Bactriane orientale (1974–1978)*, 150.

⁸⁴Venco Ricciardi, "Archaeological Survey in the Upper Atrek Valley (Khorasan, Iran)," 62.

- Oxford: Archaeopress, 2016. <http://archaeopress.com/ArchaeopressShop/Public/displayProductDetail.asp?id={27710CAF-069B-43D3-A53B-4BB1A293F456}>.
- Cattani, M. "Excavations at Takhirbai-depe (thr-1) (1992-1993). Preliminary Notes." In *The Archaeological Map of the Murghab Delta. Preliminary Reports 1990-95. Centro Scavi e Ricerche Archeologiche, Reports and Memoirs, Series Minor 3*, edited by A. Gubaev, G. Koshelenko, and M. Tosi, 97-104. Rome: Istituto Italiano per l'Africa e l'Oriente, 1998.
- Cattani, M., B. Cerasetti, S. Salvatori, and M. Tosi. "The Murghab Delta in Central Asia 1990-2001: The GIS from Research Resource to a Reasoning Tool for the Study of Settlement Change in Long-term Fluctuations." In *The Archaeological Map of the Murghab Delta. Studies and Reports. Vol. 2. The Bronze Age and Early Iron Age in the Margiana lowlands: Facts and Methodological Proposal for a Redefinition of the Research Strategies*, edited by S. Salvatori, M. Tosi, and B. Cerasetti, 39-45. Oxford: Archaeopress, 2008.
- Cattani, M., and B. Genito. "The Pottery Chronological Seriation of the Murghab Delta from the End of the Bronze Age to the Achaemenid Period: A Preliminary Note." In *The Archaeological Map of the Murghab Delta. Preliminary Reports 1990-95. Centro Scavi e Ricerche Archeologiche, Reports and Memoirs, Series Minor 3*, edited by A. Gubaev, G. Koshelenko, and M. Tosi, 75-87. Rome: Istituto Italiano per l'Africa e l'Oriente, 1998.
- Cattani, M., and S. Salvatori. "Transects and Other Techniques for Systematic Sampling." In *The Archaeological Map of the Murghab Delta. Studies and Reports. Vol. 2. The Bronze Age and Early Iron Age in the Margiana lowlands: Facts and Methodological Proposal for a Redefinition of the Research Strategies*, edited by S. Salvatori, M. Tosi, and B. Cerasetti, 1-27. Oxford: Archaeopress, 2008.
- Cattenat, A., and J-C. Gardin. "Diffusion comparée de quelques genres de poterie caractéristiques de l'époque achéménide sur le plateau iranien et en Asie centrale." In *Le plateau iranien et l'Asie centrale des origines à la conquête islamique. Leurs relations à la lumière des documents archéologiques* [Paris, 22-24.03.1976, Colloques internationaux du Centre National de la Recherche Scientifique 567], edited by M. J. Deshayes, 225-48. Paris: Éditions du CNRS, 1977.
- Cerasetti, B. "A GIS for the Archaeology of the Murghab Delta." In *The Archaeological Map of the Murghab Delta. Studies and Reports. Vol. 2. The Bronze Age and Early Iron Age in the Margiana lowlands: Facts and Methodological Proposal for a Redefinition of the Research Strategies*, edited by S. Salvatori, M. Tosi, and B. Cerasetti, 29-37. Oxford: Archaeopress, 2008.
- Cerasetti, B. "Remote Sensing and Survey of the Murghab Alluvial Fan, Southern Turkmenistan: The Coexistence of Nomadic Herders and Sedentary Farmers in the Late Bronze Age and Early Iron Age." In *Proceedings of the 7th International Congress on the Archaeology of the Ancient Near East April 2010, the British Museum and UCL, London*, Vol. 1, edited by R. Matthews, J. Curtis and A. Fletcher, 539-58. Wiesbaden: Harrassowitz, 2012.
- Cleuziou, S. "Copper Arrowheads Typology and Chronology." In *The Archaeological Map of the Murghab Delta. Preliminary Reports 1990-95. Centro Scavi e Ricerche Archeologiche, Reports and Memoirs, Series Minor 3*, edited by A. Gubaev, G. Koshelenko, and M. Tosi, 119-24. Rome: Istituto Italiano per l'Africa e l'Oriente, 1998.
- Cleuziou, S., V. Gaibov, and A. Annaev. "Off-site Archaeological Transects in Northern Margiana." In *The Archaeological Map of the Murghab Delta. Preliminary Reports 1990-95. Centro Scavi e Ricerche Archeologiche, Reports and Memoirs, Series Minor 3*, edited by A. Gubaev, G. Koshelenko, and M. Tosi, 27-34. Rome: Istituto Italiano per l'Africa e l'Oriente, 1998.
- Dimand, M. S., W. Hauser, J. M. Upton, and C. K. Wilkinson. "The Iranian Expedition, 1937: The Museum's Excavations at Nishāpūr." *The Metropolitan Museum of Art Bulletin* 33, no. 11 (1938): 1, 3-23.
- Duke, H. I. "Pšaktepe - pamâtnik kûltury Severnoj Baktrii." *Obšestvennye Nauki v Uzbekistane* 12 (1974): 36-38.
- Durdyev, D. "Gorodiše Starogo Kišmana (Otčët o raskopkah 1956-1957 gg.)." *Trudy Instituta Istorii, arheologii i ètnografii Akademii Nauk Turkmenskoi SSR* 5 (1959): 136-59.
- Francfort, H-P., A. A. Vahdati, J. Bendezu-Sarmiento, J. Lhuillier, E. Fouache, M. Tengberg, M. Mashkour, and Z. Shirazi. "Preliminary Report on the Soundings at Tepe Damghani Sabzevar, Spring 2008." *IA* 49 (2014): 111-58.
- Garazhian, O. "Recent Excavations at Tapeh Baluch (Baluch Mound): A Neolithic Site in Neyshabur Plain." *NE Iran, NEO-LITHICS. The Newsletter of Southwest Asian Neolithic Research* 2, no. 12 (2012): 20-31.
- Genito, B. "The Iron Age in Merv Oasis." In *The Archaeological Map of the Murghab Delta. Preliminary Reports 1990-95. Centro Scavi e Ricerche Archeologiche, Reports and Memoirs, Series Minor 3*, edited by A. Gubaev, G. Koshelenko, and M. Tosi, 89-96. Rome: Istituto Italiano per l'Africa e l'Oriente, 1998.
- Genito, B. "Trial Trench at Site no. 215." In *The Archaeological Map of the Murghab Delta. Preliminary Reports 1990-95. Centro Scavi e Ricerche Archeologiche, Reports and Memoirs, Series Minor 3*, edited by A. Gubaev, G. Koshelenko, and M. Tosi, 125-35. Rome: Istituto Italiano per l'Africa e l'Oriente, 1998.
- Gubaev, A., G. Koshelenko, and M. Tosi, eds. *The Archaeological Map of the Murghab Delta. Preliminary Reports 1990-95. Centro Scavi e Ricerche Archeologiche, Reports and Memoirs, Series Minor 3*. Rome: Istituto Italiano per l'Africa e l'Oriente, 1998.
- Gutlyev, G. "Âsy-depe - novyj pamâtnik perioda Âz-depe." In *Arheologičeskie otkrytiâ 1969 goda*, edited by B.A. Rybakov, 423-4. Moscow: Izdatel'stvo "NAUKA", 1970.
- Gutlyev, G. "Raboty na poselenii ranneželeznoego veka Âssy-depe u Baba-Durmaza." *Karakumskie Drevnosti* 3 (1970): 64-71.
- Gutlyev, G. "Raboty v Ćardžouskoj i Ašhabadskoj oblastâh." In *Arheologičeskie otkrytiâ 1982 goda*, edited by B. A. Rybakov, 487-8. Moscow: Izdatel'stvo "NAUKA", 1984.
- Gutlyev, G. "Raboty v nizov'âh Murgaba." In *Arheologičeskie otkrytiâ 1975 goda*, edited by B. A. Rybakov, 547. Moscow: Izdatel'stvo "NAUKA", 1976.
- Gutlyev, G. "Raskopki Garaoj-depe." In *Novye arheologičeskie otkrytiâ v Turkmenistane*, edited by V. M. Masson, 33-47. Ashgabat: Izdatel'stvo "Ylym", 1982.
- Gutlyev, G. "Raskopki na poselenii Jašlyly-depe i Goša-depe." In *Arheologičeskie otkrytiâ 1973 goda*, edited by B. A. Rybakov, 504. Moscow: Izdatel'stvo "NAUKA", 1974.

- Gutlyev, G. "Raskopki poseleniâ ranneželeznogo veka Âsydepe v Kaahkinskom rajone." *Karakumskie Drevnosti* 5 (1977): 18–24.
- Gutlyev, G. "Stratigrafičeskij šurf Âšylydepe u Gâursa." In *Novye issledovaniâ po arheologii Turkmenistana*, edited by V. M. Masson, 21–34. Ashgabat: Izdatel'stvo "Ylym", 1980.
- Gutlyev, G. "Stratigrafičeskij šurf na Garaoj-depe." In *Problemy arheologii Turkmenistana*, edited by V. M. Masson, 22–31. Ashgabat: Izdatel'stvo "Ylym", 1984b.
- Gutlyev, G., and Ü. Zadneprovskij. "Âšildepe – ètallonyj pamâtnik ranneželeznogo veka na territorii severnoj Parfil." *Izvestiâ Akademii Nauk TSSR. Seriâ obšestvennyh nauk* no. 4 (1985): 44–50.
- Hiebert, F. T. *Origins of the Bronze Age Oasis Civilization in Central Asia* [American School of Prehistoric Research Bulletin 42, Peabody Museum of Archaeology and Ethnology]. Cambridge, MA: Harvard University, 1994.
- Hiebert, F. T., and R. H. Dyson. "Prehistoric Nishapur and the Frontier Between Central Asia and Iran." *IA* 37 (2002): 113–49.
- Hiebert, F. T., and C. C. Lamberg-Karlovsky. "Central Asia and the Indo-Iranian Borderlands." *Iran* 30 (1992): 1–15.
- Hlopina, K. I. "Namazga-depe and the Late Bronze Age of Southern Turkmenia." In *The Bronze Age Civilization of Central Asia. Recent Soviet Discoveries*, edited by Ph. L. Kohl, 35–60. New York: M.E. Sharpe, 1981.
- Isamididnov, M. H. *Erkurgan (stratigrafiâ i periodizaciâ)*. Tashkent: Izdatel'stvo "FAN" Uzbekskoj SSR, 1984.
- Isamididnov, M. H., H. Almazova, and K. Rapen. "Kamennye orudiâ iz Koktepa." *Istoriâ Material'noj Kul'tury Uzbekistana* 35 (2006): 70–78.
- Isamididnov, M. H., F. Grenet, and A. A. Gricina. "Raboty Uzbeksko-francuzskoj arheologičeskoj èkspedicii na gorodiše Koktepa v 2001 godu." *Arheologičeskie Issledovaniâ v Uzbekistane – 2001 god Samarkand* (2002): 68–76.
- Isamididnov, M. H., and K. Rapen. "K stratigrafii gorodiša Koktepa." *Istoriâ Material'noj Kul'tury Uzbekistana* 30 (1999): 68–79.
- Isamididnov, M. H., K. Rapen, and F. Grenet. "Raskopki na gorodiše Koktepa." *Arheologičeskie Issledovaniâ v Uzbekistane – 2000 god Samarkand* (2001): 79–85.
- Joglekar, P. P. "A Preliminary Report on the Faunal Remains at Takhirbaj 1, Turkmenistan." In *The Archaeological Map of the Murghab Delta. Preliminary Reports 1990–95. Centro Scavi e Ricerche Archeologiche, Reports and Memoirs, Series Minor* 3, edited by A. Gubaev, G. Koshelenko, and M. Tosi, 115–19. Rome: Istituto Italiano per l'Africa e l'Oriente, 1998.
- Kačuris, K. A. "K izučeniû ovliâdepinskogo oazisa v nižnem tečenii r." *Tedžena, Kratkije Soobšeniâ Instituta Arheologii* 108 (1966): 109–15.
- Kačuris, K. A. "Raskopki v El'ken-depe v Južnoj Turkmenii." In *Arheologičeskie otkrytiâ 1966 goda*, edited by B. A. Rybakov, 335–6. Moscow: Izdatel'stvo "NAUKA", 1967.
- Kačuris, K. A., and V. I. Sarianidi. "Raskopki na Ulug-depe." In *Arheologičeskie otkrytiâ 1967 goda*, edited by B. A. Rybakov, 342–4. Moscow: Izdatel'stvo "NAUKA", 1968.
- Kaim, B. "The Parthian settlements in the Serakhs Oasis." *Parthica* 10 (2008): 129–34.
- Kohl, Ph. L., ed. *The Bronze Age Civilization of Central Asia. Recent Soviet Discoveries*. New York: M.E. Sharpe, 1981.
- Kohl, Ph. L. *Central Asia. Palaeolithic Beginnings to the Iron Age. L'Asie centrale des origines à l'Âge du Fer*, Synthèse n° 14, Paris: Éditions Recherches sur les civilisations, 1984.
- Kohl, Ph. L. "The Namazga Civilization: An Overview." In *The Bronze Age Civilization of Central Asia. Recent Soviet Discoveries*, edited by Ph. L. Kohl, vii–xxxviii. New York: M.E. Sharp, 1981.
- Kohl, Ph. L., and D. L. Heskell. "Archaeological reconnaissance in the Darreh Gaz Plain: a short report." *Iran* 18 (1980): 160–72.
- Kol', F. L., and D. L. Geskel'. "Arheologičeskie pamâtniki ravniny Darre Gaz (rasprostranenie sistemy hronologii Namazga na materialy Iranskogo Horasana." *Sov Arkh* 4 (1982): 33–47.
- Košelenko, G. A., ed. *Drevnejšie gosudarstva Kavkaza i Srednej Azii*. Moscow: Arheologičeskoe izdatel'stvo "NAUKA", 1985.
- Košelenko, G. A., and V. I. Sarianidi. "Mervskij oazis." In *Drevnejšie gosudarstva Kavkaza i Srednej Azii*, edited by G. A. Košelenko, 181–84. Moscow: Arheologičeskoe izdatel'stvo "NAUKA", 1985.
- Lamberg-Karlovsky, C. C. "Afterword." In *The Bronze Age Civilization of Central Asia. Recent Soviet Discoveries*, edited by Ph. L. Kohl, 386–97. New York: M.E. Sharp, 1981.
- Lamberg-Karlovsky, C. C. "Foreword." In *Origins of the Bronze Age Oasis Civilization in Central Asia* [American School of Prehistoric Research Bulletin 42, Peabody Museum of Archaeology and Ethnology], edited by F. T. Hiebert, xvii–xxx. Cambridge, MA: Harvard University, 1994.
- Lamberg-Karlovsky, C. C. "Prehistoric Central Asia: A Review." *Antiquity* 47 (1973): 43–6.
- Lecomte, O. "A Group of Yaz II–III Stamp-impressions from Ulug-depe (Turkmenistan)." In *U istokov civilizacij. Sbornik statej k 75-letiju Viktora Ivanoviča Sarianidi*, edited by M. F. Kosarev, P. M. Kožyn, and N. A. Dubova, 168–81. Moscow: Staryj Sad, 2004.
- Lecomte, O. "Ulug-depe: 4000 Years of Evolution Between Plain and Desert." In *Historical and Cultural Sites of Turkmenistan: Discoveries, Researches and Restoration for 20 Years of Independence*, edited by M. Mamedov and R. Muradov, 221–37. Ashgabat: Türkmen döwlet nesiryat gullugy, 2011.
- Lhuillier, J. *Le phénomène des "cultures à céramique modelée peinte" en Asie Centrale dans l'évolution et la transformation des sociétés de la fin de l'Âge du Bronze et du début de l'Âge du Fer (II^e–I^{er} millénaire avant notre ère): une synthèse comparative et régionale de la culture matérielle*, unpublished Ph.D. dissertation, Université Paris 1 Panthéon Sorbonne, Paris, 2010.
- Lhuillier, J. "Les cultures 'à céramique modelée peinte' en Asie centrale: un aperçu de l'assemblage céramique de la deuxième moitié du 2^e millénaire av. n.è." *IA* 48 (2013): 103–46.
- Lhuillier, J., A. Dupont-Delaleuf, O. Lecomte, and J. Bendezu-Sarmiento. "The Middle Iron Age in Ulug depe: A Preliminary Typo-chronological and Technological Study of the Yaz II Ceramic Complex." In *Pottery and Chronology of the Early Iron Age in Central Asia*, edited by M. Wagner, 9–27. Warsaw: Akiku Graphics, 2013.
- Lhuillier, J., M. H. Isamididnov, and C. Rapin. "Ranneželeznyj vek severnovo Sogda: harakteristika i predvaritel'naâ tipologičeskaâ hronologičeskâ." *Istoriâ Material'noj Kul'tury Uzbekistana* 37 (2012): 57–66.

- Luneau, E. "A New Assessment of the End of the Oxus Civilization (Southern Central Asia, ca. 1750–1500/1400 BCE): Overview of the Transformations of the Society." In *Broadening Horizons 4 A Conference of Young Researchers Working in the Ancient Near East, Egypt and Central Asia, University of Torino, October 2011* [BAR International Series 2698], edited by G. Affanni, C. Baccarin, L. Cordera, A. Di Michele, and K. Gavagnin, 303–8, Oxford: Archaeopress, 2015.
- Lyonnet, B. *Prospections archéologiques en Bactriane orientale (1974–1978). Vol. 2. Céramique et peuplement du chalcolithique à la conquête Arabe*. Mémoires de la Mission Archéologique Française en Asie Centrale 8, Éditions Recherche sur les Civilisations, Paris, 1997.
- Marušenko, A. A. "El'ken-depe (Otcët o raskopkah 1953, 1955 i 1956 gg.)." *Trudy Instituta Istorii, arheologii i ètnografii Akademii Nauk Turkmenskoi SSR* 5 (1959): 54–109.
- Marušenko, A. A. "Staryj Serahs (Otcët o raskopkah 1953 g.)." *Trudy Instituta Istorii, arheologii i ètnografii Akademii Nauk Turkmenskoi SSR* 2 (1956): 161–205.
- Masimov, I. S. "Novye pamätniki ranneželeznogo veka Murgabskogo oazisa." In *Novye arheologičeskie otkrytiä v Turkmenistane*, edited by V. M. Masson, 20–33. Ashgabat: Izdatel'stvo "Ylym", 1982.
- Masimov, I. S., and B. N. Udeumuradov. "Novye materialy po ranneželeznomu veku Nizovij Murgaba." In *Turkmenistan v epohu ranneželeznogo veka*, edited by V. M. Masson, and E. Atagarryev, 12–27. Ashgabat: Izdatel'stvo "Ylym", 1984.
- Masson, V. M., ed. *Baktrijskie Drevnosti. Predvaritel'nye soobšeniä ob arheologičeskikh rabotah na ũge Uzbekistana*. Leningrad: Izdatel'stvo "NAUKA", Leningradskoe otdelenie, 1976.
- Masson, V. M. *Drevnezemledel'českaä Kul'tura Margiany. Materialy i issledovaniä po Arheologii SSSR* 73. Moscow: Izdatel'stvo Akademii Nauk SSR, 1959.
- Masson, V. M. *Kul'turogenез Drevnej Central'noj Azii*, Seria "Aziatika", Izdatel'stvo Filologičeskogo Fakulteta Sankt-Peterburgskogo Gosudarstvennogo Universiteta, Sankt-Peterburg, 2006.
- Masson, V. M. *Novye arheologičeskie otkrytiä v Turkmenistane*. Ashgabat: Izdatel'stvo "Ylym", 1982.
- Masson, V. M. "Üžnoturkmenistsanskij centr rannezemledel'českikh kul'tur: (V svete rabot ÜTAKÈ 1955–1958 gg.)." *TÜTAKÈ* 10 (1960): 11–35.
- Masson, V. M., and V. I. Sarianidi. *Central Asia: Turkmenia before the Achaemenids*. Ancient Peoples and Places 79, London: Thames and Hudson, 1972.
- Mokrobodov, V. V., and Wu Xin. "The investigations of the Uzbekistan-American expedition in Surkhandararya province. O razvedočnyh rabotah Uzbekistano-Amerikanskoj èkspedicii v Surhandar'inskoj oblasti." *Arheologičeskij Uzbekistana* 1, no. 8 (2014): 88–97.
- Nemceva, N. B. "Stratigrafiä Üžnoj Okrainy Gorodiša Afrasiab." In *Afrasiab. Afrasibskaä Kompleksnaä Arheologičeskaä Èkspediciä*. Vol. 1, edited by Ä. G. Gulämov, 153–205. Tashkent: Izdatel'stvo "FAN" UzSSR, 1969.
- Orazov, O. *Arheologičeskie i arhitekturnye pamätniki Serahskogo oazisa*. Ashgabat: Izdatel'stvo "Turkmenistan", 1973.
- Orazov, O. "Nekotorye itogi arheologičeskikh issledovanij pamätnikov Serahskogo oazisa." *Karakumskie Drevnosti* 3 (1970): 123–33.
- Pidaev, Š. R. "Otkrytie novogo pamätnika serediny 1 tys. do n.e." *Obšestvennye Nauki v Uzbekistane* 11 (1973): 77–82.
- Pilipko, V. N. "Keramičeskaä peč ranneželeznogo veka v okrestnostäh El'ken-depe." *Izvestiä Akademii Nauk TSSR. Seria obšestvennyh nauk* 6 (1991): 70–3.
- Pilipko, V. N. "Kompleks keramiki ahemenidskogo vremeni s poseleniä Oükly v Serahskom oazise (Üžnyj Turkmenistan)." In *Srednaä Aziä. Arheologičeskij, istoričeskij, kul'turnyj. Materialy meždunarodnoj konferencii posväšennoj 50-letiju naučnoj deätel'nosti G.V. Šiškinov. Gosudarstvennyj Muzej Vostoka. g. Moskva, Rossiä. 14-16 dekabrá 2000 g. Central Asia. Archaeology, history, culture* [Papers presented at the international conference in honour of the 50th anniversary of G.V. Shishkina's scholarly activity. State Oriental Museum. Moscow, Russia. 14th–16th December 2000], edited by T. G. Allatkina, S. B. Bolelov, O. N. Inevatkina, and T. K. Mkrtyčev, 95–98. Moscow: Gosudarstvennyj Muzej Vostoka, 2000.
- Pilipko, V. N. "Nekotorye itogi razvedyvatel'nogo izučeniä Dašlinskogo oazisa v Kaahkinskom rajone TSSR." *Izvestiä Akademii Nauk TSSR. Seria obšestvennyh nauk* 5 (1982): 91–93.
- Pilipko, V. N. "Poselenie ranneželeznogo veka Garry-Käriz I." In *Turkmenistan v epohu ranneželeznogo veka*, edited by V. M. Masson and E. Attagaryev, 28–58. Ashgabat: Izdatel'stvo "Ylym", 1984.
- Pilipko, V. N. *Poseleniä Severno-Zapadnoj Baktrii*. Ashgabat: Izdatel'stvo "Ylym", 1985.
- Pilipko, V. N. "Rannij železnyj vek Èteka (üžnyj Turkmenistan)." *Informacionnyj Bülleten'. Meždunarodnaä Associaciä po Izüčeniü Kul'tur Central'noj Azii* 11 (1986): 8–18.
- Pilipko, V. N. "Raskopki na Hyrly-depe." *Problemy Istorii, Filologii, Kul'tury. Journal of Historical, Philological and Cultural Studies* 15 (2005): 57–80.
- Pumpelly, R. *Explorations in Turkestan. Expedition of 1904. Prehistoric Civilizations of Anau*, Vol. 1. Washington, DC: Press of Gibson Bros, 1908.
- Rapen, K., M. H. Isamidinov, and A. A. Gricina. "Raskopki v central'noj časti gorodiša Koktepa (R-1)." In *Arheologičeskie Issledovaniä v Uzbekistane – 2002 god*. Vypusk - 3, edited by T. Š. Širinov, 143–50. Tashkent: Üzbekiston Respublikasi Fanlar Akademiäsi Samarqand Bülimi Akademik Ähë Gulomov Nomli Arheologičeskij Instituti, 2003.
- Rtveladze, È. V. "K karakteristike pamätnikov Surhan-dar'inskoj oblasti ahemenidskogo vremeni." *Sov Arkh* 2 (1975): 262–66.
- Rtveladze, È. V. "Novye drevnebaktrijskie pamätniki na ũge Uzbekistana." In *Baktrijskie Drevnosti. Predvaritel'nye soobšeniä ob arheologičeskikh rabotah na ũge Uzbekistana*, Izdatel'stvo, edited by M. V. Masson, 93–103. Leningrad: "NAUKA", Leningradskoe otdelenie, 1976.
- Rtveladze, È. V. "Razvedočnoe izučenie baktrijskikh pamätnikov na ũge Uzbekistana." In *Drevnaä Baktriä. Predvaritel'nye soobšeniä ob arheologičeskikh rabotah na ũge Uzbekistana*, edited by V. M. Masson, 74–85. Leningrad: Izdatel'stvo "NAUKA", Leningradskoe otdelenie, 1974.
- Rtveladze, È. V., and Z. A. Hakimov. "Maršrutnye issledovaniä pamätnikov Severnoj Baktrii." In *Iz istorii antičnoj kul'tury Uzbekistana*, edited by G. A. Pugačenkova, 10–34. Tashkent: Izdatel'stvo Literatury i Iskusstva im. Gafura Guläma, 1973.
- Sagdullaev, A. S. "Raskopki drevnebaktrijskoj usad'by Kyzylča 6 (Po itogam rabot 1974–1976 gg.)." *Sov Arkh* 2 (1980): 228–35.
- Sagdullaev, T., and Z. Hakimov. "Arheologičeskoe izučenie gorodiša Kyzyl-tepe (po itogam rabot 1973–1974 gg.)." In

- Baktrijskie Drevnosti. Predvaritel'nye soobšeniâ ob arheologičeskikh rabotah na úge Uzbekistana*, edited by M. V. Masson, 24–9. Leningrad: Izdatel'stvo "NAUKA", Leningradskoe otdelenie, 1976.
- Šajdullaev, Š. B. *Severnaâ Baktriâ v epohy rannego železnogo veka*. Turon-Movarounnahr civilizaciâsi. Civilizations of Turan-Mavarannahr. Civilizaciâ Turana-Maverannahra IV, Tashkent. Izdatel'stvo narodnogo nasledia imeni Abdully Kodyri, 2000.
- Šajdullaev, Š. B. "Untersuchungen zur frühen Eisenzeit in Nordbaktrien." *AMIT* 34 (2002): 243–339.
- Salvatori, S. "The Margiana Settlement Pattern from the Middle Bronze Age to the Parthian-Sasanian: A Contribution to the Study of Complexity." In *The Archaeological Map of the Murghab Delta. Studies and Reports. Vol. 2. The Bronze Age and Early Iron Age in the Margiana lowlands: Facts and Methodological Proposal for a Redefinition of the Research Strategies*, edited by S. Salvatori, M. Tosi, and B. Cerasetti, 57–74. Oxford: Archaeopress, 2008.
- Salvatori, S., M. Tosi, and B. Cerasetti, eds. *The Archaeological Map of the Murghab Delta. Studies and Reports. Vol. 2. The Bronze Age and Early Iron Age in the Margiana lowlands: Facts and Methodological Proposal for a Redefinition of the Research Strategies*, BAR International Series 1806. Oxford: Archaeopress, 2008.
- Sarianidi, V. I. *Drevnie zemledel'cy Afganistana*. Moscow: Izdatel'stvo "NAUKA", 1977.
- Sarianidi, V. I. *Hram i Nekropol' Tillâtepe*. Moscow: Izdatel'stvo "NAUKA", 1989.
- Sarianidi, V. I. "Issledovanie sloev ranneželeznogo veka na Ulug-depe." In *Arheologičeskie otkrytiâ 1970 goda*, edited by B. A. Rybakov, 433–4. Moscow: Izdatel'stvo "NAUKA", 1971.
- Sarianidi, V. I. "Prodolženie rabot na Ulug-depe." In *Arheologičeskie otkrytiâ 1968 goda*, edited by B. A. Rybakov, 434–5. Moscow: Izdatel'stvo "NAUKA", 1969.
- Sarianidi, V. I. "Raskopki 1970 g. na Ulug-depe." *Uspehi Sredneaziatskoj Arheologii* 1 (1972): 53–5.
- Sarianidi, V. I. *Raskopki Tillâ-tepe v severnom Afganistane*, Materialy k Arheologičeskoj Karte Severnogo Afganistana 1, Izdatel'stvo "NAUKA", Moscow, 1973.
- Spooner, B. "Southwest Khurasan." *Iran* 8 (1970): 200.
- Sverčkov, L. M., and N. Boroffka. "Arheologičeskie issledovaniâ v Bandyhane v 2005 g." *Trudy Bajsunskoj naučnoj èkspedicii* 3 (2007): 97–132.
- Sverčkov, L. M., and N. Boroffka. "Kompleks perioda Âz II iz Bandyhana." *Istoriâ Material'noj Kul'tury Uzbekistana* 36 (2008): 50–6.
- Sverčkov, L. M., U. Sin, and N. Boroffka, "Raskopki Kyzyltepa." *Arheologičeskie issledovaniâ v Uzbeksitane 2010–2011 gody* 8 (2012): 253–61.
- Sverčkov, L. M., W. Xin, and N. Boroffka "Gorodiše Kyzyltepa (konec VI - konec IV vv. do n.è.): novye dannye. The Site of Kyzyltepa (VI–IV cent. B.C.): New Data." *Scripta Antiqua. Ancient History, Philology, Arts and Material Culture. The Almanac* 3 (2013): 31–75.
- Udeumuradov, B. N. "Razvedočne issledovaniâ Âjindepe." In *Arheologičeskie otkrytiâ 1983 goda*, edited by B. A. Rybakov, 555–6. Moscow: Izdatel'stvo "NAUKA", 1984.
- Usmanova, Z. I. "Èrk-kala (Po materialam ÛTAKÈ 1955–1959 gg.)." *TÛTAKÈ* 12 (1963): 20–94.
- Usmanova, Z. I. "New material on ancient Merv." *Iran* 30 (1992): 55–63.
- Ûsupov, H. "Razvedka v zone zatopeniâ Saryâzynskogo vodohranišâ., *Izvestiâ Akademii Nauk TSSR. Seriâ obšestvennyh nauk* 5 (1978): 22–30.
- Vahdati, A. A. "A BMAC Grave from Bojnord, North-eastern Iran." *Iran* 52 (2014): 19–27.
- Vahdati, A. A. "A Preliminary Report on the First Season of Excavation at Jayran Tepe in the Plain of Esfaryen, Northeastern Iran, 2012." *IA* 51 (2016): 85–101.
- Vahdati, A. A. "Šri Mifragh va Ahan dar Khurâsân (3000 tã 500 pm)." In *Guzari bar bâstâshenâsi-yi Khurâsân*, edited by M. L. Khânikî, 37–47. Tehran: ICHTO, 1393/2015.
- Venco Ricciardi, R. "Archaeological Survey in the Upper Atrek Valley (Khorasan, Iran): Preliminary Report." *Mesopotamia* 15 (1980): 51–72.
- Vidale, M., E. Battistella, and G. Guida. "Iron-working and Ceramic Recycling on the Surface of a Late Iron Age Fort at the North-eastern Fringe of the Murghab Delta." In *The Archaeological Map of the Murghab Delta. Studies and Reports. Vol. 2. The Bronze Age and Early Iron Age in the Margiana lowlands: Facts and Methodological Proposal for a Redefinition of the Research Strategies*, edited by S. Salvatori, M. Tosi, and B. Cerasetti, 195–219. Oxford: Archaeopress, 2008.
- Vidale, M., P. Bianchetti, and M. Cattani. "A Semiprecious Stone-working Area Dating to the Late Iron Age on the Surface of Takhirbai-depe." In *The Archaeological Map of the Murghab Delta. Preliminary Reports 1990–95. Centro Scavi e Ricerche Archeologiche, Reports and Memoirs, Series Minor* 3, edited by A. Gubaev, G. Koshelenko, and M. Tosi, 105–13. Rome: Istituto Italiano per l'Africa e l'Oriente, 1998.
- Vogelsang, W. J. *The Rise and Organisation of the Achaemenid Empire: The Eastern Iranian Evidence*. Leiden: Brill, 1992.
- Vorob'eva, M. G. *Dingil'dže. Usad'ba I tysâčetiâ do n. e. v drevnem Horezme*. Moscow: Materialy Horezmskoj Èkspedicii 9, Izdatel'stvo "NAUKA", 1973.
- Vorob'eva, M. G. "Keramika Horezma antičnogo perioda." In *Keramika Horezma* [Trudy Horezmskoj Arheologo-Ètnografičeskoj Èkspedicii IV], edited by M. G. Vorob'eva and S. P. Tolstov, 63–220. Moscow: Izdatel'stvo Akademii Nauk SSSR, 1959.
- Wagner, M. "Early Iron Age in the Sarakhs Oasis." In *Bürünç-Demir eýyamlary we Türkmeniň Maddý-Ruhy Mirasy. Halkara ylmy maslahatyň gysgaça beýany (2011-njiýylyň 10-11-nji noýabry)*. Bronze and Iron Ages and material-spiritual heritage of Turkmenistan. Abstracts of reports of the International Scientific Conference (November 10–11, 2011). *Bronzovo-železnij vek i material'no-duhovnoe nasledie Turkmen, Materialy Meždunarodnoj naučnoj konferencii (10–11 noâbrâ 2011 g.)*, edited by N. Kakalyëwa, 171–72. Ashgabat: Izdatel'stvo "Ylym", 2011.
- Wright, J. "Non-graphic Information System and Diachronic Transformations in Margiana." In *The Archaeological Map of the Murghab Delta. Studies and Reports. Vol. 2. The Bronze Age and Early Iron Age in the Margiana lowlands: Facts and Methodological Proposal for a Redefinition of the Research Strategies*, edited by S. Salvatori, M. Tosi, and B. Cerasetti, 47–56. Oxford: Archaeopress, 2008.
- Zejmal', T. I. "Drevnezemledel'českoe poselenie Boldaj-tepe." *Material'naâ Kul'tura Tadžikistana* 2 (1971): 80–100.