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Chapter 3

Eastern Anatolia as a Pathway between Southern Caucasus and Northern Mesopotamia in the Late Bronze Age

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Abstract

The study of the trade and communications network in place in the Late Bronze Age between the Southern Caucasus and Northern Mesopotamia is presently hindered by a decisive lack of sufficient data regarding Eastern Anatolia, that lies between the two regions. While waiting for new data on the subject, this paper will try to bridge the gap in information by implementing a Least – Cost Path Analysis to evaluate the possible impact of some geographical features on the networks connecting those regions and to possibly locate Least – Cost Corridors through which these relations took place.

Introduction

In the Late Bronze Age, roughly corresponding to the second half of the 2nd millennium BCE, the Near East saw the consolidation of regional political entities that were able to rise to the role of regional powers. The rise of these regional powers was instrumental to the implementation of a network system of trade and relationships connecting the different areas of the Near East among themselves and with its peripheral regions (Liverani 2014: 278-289).

In this same period², the Southern Caucasus was the theatre of a series of changes mirrored in the differences in the archaeological record between the MBA and the LBA (Sagona 2017: 378-382). In this context, it seems that the Southern Caucasus also took part in the network of trade and relationship that was implemented in the Near East: the presence of groups of objects coming from the core areas of the Near East, in southern Caucasian archaeological sites, such as, only to cite a few, Saphar Karaba in Georgia (Narimanishvili 2010) or Gegharot in Armenia (Badalyan *et al.* 2008: 72-73) (Fig.1), is a proof of that. Among these groups of objects, at least twenty Mittanian seals of the Common Style (Iskra 2019), a stone weight in the shape of the frog bearing an inscription of Ulam-Burariaš a Kassite king that lived at the start of the XIV century BCE (Kohl 1988: 595; Bobokhyan 2012: 167), vitreous beads and scarabs (Narimanishvili 2010: 322-324) should be cited. Although few in num-

1 PhD candidate, Ludwig – Maximilians – Universität München. The talk presented at ICAANE 13th in Copenhagen and this subsequent paper stems from research on the Late Bronze Age of the Southern Caucasus that I have carried out in my PhD.

2 The chronology of the Late Bronze Age in the Southern Caucasus is still a much-debated topic among scholars, but recent works, supported by ¹⁴C data, were able to better define its chronological limits (e.g. Manning *et al.* 2018).

ber, these objects are a proof of the existence of some sort of relation between the Southern Caucasus and the rest of the Near East, that, however, it is presently difficult to characterise.

One of the reasons of this difficulty rests on the state of the archaeological research in Eastern Anatolia. Because of its geographical location between the Southern Caucasus and Northern Mesopotamia, the study of its history both from historical and archaeological sources is essential when researching the relations between the areas mentioned above. However, the LBA of this large area, that spans from the Euphrates to Mt. Ağrı, and from the Pontic Mountains to the Upper Tigris valley, is still a rather unknown period: in general it is possible to say that the quality and quantity of data available for the western and southern areas of the region are superior to the ones available for the central and eastern areas that only in more recent years saw an increase in the number of surveys and excavations, even though the data currently available are still far from satisfactory.

While waiting for the increase in the published materials and data from Eastern Anatolia, the study of the historical geography of Eastern Anatolia could be essential to better characterise this region and its possible relations with both the core areas of the Near East and the Southern Caucasus.

This text will be focused on the central and eastern regions of Eastern Anatolia, mainly the area east of Erzurum. The first part of the text will be devoted to a rapid review of the historical geography of the region as it can be studied from the historical sources of the period and from the archaeological data currently available and published. The second part will be devoted to the results of a Least Cost Path Analysis that had been carried out between three key sites of the region here considered and to the comparison of these results with the historical and archaeological data.

The Highlands of Eastern Anatolia: An Archaeological and Historical Overview

The historical geography of Eastern Anatolia in the Late Bronze Age has since long been a topic of study among ancient Near Eastern historians because of the role that this territory played in the history of the Hittites and Middle-Assyrian Kingdoms (e.g. Forlanini 2004; Devecchi 2017) as well as its role in the formation of the Urartian Kingdom in the Iron Age (Salvini 1967).

In the region east of Erzurum the number of excavations with a sufficient set of data for the LBA is still low: the main archaeological excavations for the period are the ones of Sos Höyük (Sagona 2010) and Pulur Höyük (Işıklı 2008; Işıklı 2012) in the Erzurum plain, and the excavation of the site of Bozkurt (Özfirat 2017) alongside the south-western slope of Mt. Ağrı, while the majority of the data come from archaeological surveys such as the one carried out in the surrounding areas of Lake Van in different years (Marro, Özfirat 2003; 2004; 2005) and the one carried out in the Bayburt region (Sagona, Sagona 2004). For the historical sources one encounters a similar situation: the most important sources that we have for Eastern Anatolia in the Late Bronze Age are all dated between the XV and the XIII century BCE, and between the XII and XI century BCE, and are made up by Hittite and Middle-Assyrian epigraphical sources, mainly dealing with the military campaigns carried out at their eastern and northern frontiers. Among the two aforementioned groups of epigraphical sources, the Hittite ones are less informative in regard to the area here considered, that is the one east of Erzurum, mainly because it seems that the Hittites could not extend their sphere of influence so far east (Devecchi 2017: 283-284).

Previous and later sources, such as, respectively, the Old Assyrian sources related to the trade system between Central and Southern Anatolia and the Assyrian heartland (Barjamovic 2011), or the Urartian (Salvini 2008a) and Neo-Assyrian sources (e.g. Russel 1984), can also be of great help in the study of the historical geography of the region in the Late Bronze Age. However, while comparing these earlier and later sources with the contemporary ones, it is important to consider that ethnonyms and toponyms can change or have different meanings in different ages, especially, as it is in this case, if we are dealing with foreign sources mentioning people and places distant both culturally and spatially from where the sources were produced. This is a problem also present with contemporary sources but the greater the time distance between the mentions of a certain toponym is, the bigger is the risk of it having two different meanings.

The picture that the data depict for the Erzurum plain is rather obscure because the LBA levels at the sites of Sos Höyük and Pulur Höyük (Fig.1) were exposed only in a small area but it is worth noting that from these excavations a small amount of pottery sherds characteristic of the Southern-Caucasus was recovered (Sagona 2012: 257). The only element useful for the identification of these territories in the Assyrian sources come from two Urartian inscriptions found at the present-day city of Süngütaşı (Diakonoff, Kashkai 1981: 25-26), located at the border between the province of Kars and Erzurum, identifying the area as part of the ancient city of Šašilu, in the land of *Diauehe*, a toponym that has been recognised as the Urartian variant of the Assyrian *Daiaeni* (Cancik-Kirschbaum, Hess 2016: 28), a land mentioned by the Assyrian sources as a part of the lands of *Nairi* (Salvini 1967; Cancik-Kirschbaum, Hess 2016: 99-101), a toponym designating the Eastern Anatolian highlands.

Moving eastwards towards Lake Van the situation is very similar, with a handful of excavated sites and a series of sites recognised only thanks to archaeological surveys. Among the excavated sites, the most important is Bozkurt (Özfiat 2017b) (Fig.1), located on the south-western slope of Mt. Ağrı. The relevance of this site rests on two elements: the first is the fact that this site presents all the hallmarks of a LBA site of the Southern Caucasus, with the presence of the characteristic southern Caucasian pottery and the fact that this is a fortress, like the majority of the LBA site of the Southern Caucasus located in the Armenian Highland. The second element is connected to the fact that north of Bozkurt, along the northern slopes of Mt. Ağrı, the site of Melekli, that is an Early Iron Age settlement, was recognised thanks to three urartian inscriptions found in the area of the fortresses at Karakoyunlu, the Urartian *Minuahinili*, as *Luhiuni* (Özfiat 2017c), a toponym that has been read as an urartian variant of the Assyrian *Luḫu*, mentioned by Šalmanasser I (1273-1244 BCE) as part of the land of *Uruatri* (Grayson 1987: 183), a variation of the toponym *Urartu*. Another country that is said to be part of the land of *Uruatri* is the land of *Zingun* (Grayson 1987: 183), whose localization was possible thanks to another urartian stela. The toponym *Zingun* has been read as a possible Assyrian variant of the urartian *Zinquini*, that is named in the inscriptions of the Urartian king Menua (810-786 BCE) and has been located near the Urartian site of Kef Kalesi, in the modern Turkish district of Adilcevaz on the north-western shore of Lake Van (Diakonoff, Kashkai 1981: 105; Salvini 2008a).

From a political point of view both *Nairi* and *Uruatri* in the Assyrian sources are made up by a series of polities: Tukulti-Ninurta I (1243-1207 BCE) in one of his inscriptions says to have defeated forty kings of *Nairi* (Grayson 1987: 244), while Tiglath-Pileser I (1114-1076 BCE) speaks of sixty kings of *Nairi* (Grayson 1991:21). These mentions are important for two

reasons both related to the political and social structure of these territories: the mention of such a great number of kings, could either be a simple boastful statement inserted in texts that are highly celebratory of the sovereign or could describe an actual political fragmentation of the territory in many different polities.

The Least Cost Path Analysis

A Least Cost Path Analysis (LCPA) is a type of analysis devoted to the individuation of the least cost path between two points. The history of LCPA in archaeology is strongly related to the increasing usage of GIS software in any spatial analysis and it is usually implemented with the aim to reconstruct ancient roads or paths (e.g. Di Filippo 2011, Palmisano 2017) or to estimate the relative accessibility of sites between themselves with the possibility to account for a series of natural or cultural costs, such as the slope of the terrain, the vegetation coverage, the availability of water, the possibility to travel on the water or be restricted by its presence, the presence of political or cultural borders, the perceived danger of a certain route, the economical convenience of a route, etc., that can determine whether or not a path is convenient³. The analysis was carried out on the GRASS GIS software, starting with a Digital Elevation Model (DEM), that in the case of this research was the NASADEM⁴ with a resolution of 30 m. After having acquired the base for the analysis, the first step was to calculate the slope of the terrain and then to extract the course of the rivers. After that I calculated the Accumulated Cost Surface implementing a version of the Langmuir slope function that is based on the Naismith's rule of walking time and it is an anisotropic slope function⁵. For each ACS calculated, an origin point was required and in this case three origin points were chosen. However, before mentioning the three origin points three methodological issues concerning their choice must be addressed. The first issue is the fact that the choice of an origin is unavoidable even though, as it is the case here, the aim of the research is not to study the relations between two or more defined sites but, rather, between regions. Thus, at least in this paper, origins must be considered as representative of their entire region⁶. The second issue is strictly related to this first and it is the fact that calculating LCP between determined points could suggest the existence of a direct connection between the points. However, since we have determined that, in this case, origins should be considered as representative of their regions, the LCP between the points should be interpreted as LCP between the regions considered. The third issue regards the origins themselves: in the absence of clear evidence connecting two or more sites and with the aim of studying the connections between regions rather than single sites, the origins were chosen, quite arbitrarily, on the basis of their relevance in their respective regions.

3 For a general overview of the principles behind LCPA, the most relevant bibliography related to the subject and the problems relate to the input of different cost components see: Herzog 2014.

4 The NASADEM was retrieved from the online Data Pool, courtesy of the NASA EOSDIS Land Processes Distributed Active Archive Center (LP DAAC), USGS Earth Resources Observation and Science (EROS) Center, Sioux Falls, South Dakota, <https://lpdaa.usgs.gov/tools/data-pool/>.

5 An anisotropic slope function, opposed to an isotropic one, takes into account the direction of the movement, whether it is uphill or downhill.

6 To better study the connections between regions, one could increase the number of origins, but in the talk presented at the conference and in this resulting paper, due reasons of time and space the choice was made to include only three.

The origin points for the ACS were the sites of Gegharot, Aššur and Ziyaret Tepe. Apart from Aššur, whose relevance goes without saying, the site of Gegharot, in Armenia, was chosen because is one of the better documented LBA site of the Southern Caucasus where important diagnostic objects, such as the Mittanian seals of the *Common Style* (Salje 1990), were found in a stratigraphic context with available ^{14}C dates (Manning *et al.* 2018), while Ziyaret Tepe was chosen because it could be identified with the ancient *Tushi* a control point for the Assyrians in the Upper Tigris valley whence it could have been possible to launch military campaigns into *Nairi* (Grayson 1991: 202), as they are described in the Assyrian sources.

For each origin two ACS were calculated (Fig. 2): the first accounted only the slope as a cost component, while the second included the rivers, set to possess a 15° degrees slope, as cost component. This was done to simulate the difficulty of crossing a river: the arbitrary threshold was not set to the highest level possible because crossings could have occurred at specific fords that, however, are unknown, or with the help of rafts made of inflated goat-skins, as it is stated in an inscription of Tiglath-Pileser I (Grayson 1991: 23). In the creation of the ACS the areas occupied by the large bodies of water, such as Lake Van, Lake Sevan and Lake Urmia, as well as the Black Sea and all of the non-artificial lakes present in the region were excluded. Their exclusion simulates the very unlikely situation in which no lake was traversable.

The next step was to calculate the least cost path connecting the origins among themselves and the origins with the Eastern Anatolian sites. This led to the calculation of the LCP between all the sites considered but this operation can return only one path between two points even though there could be many other paths with a similar cost (Fig. 3). To avoid this constriction, the last step of the research was to calculate a Conditional Minimum Travel Cost to locate a least-cost corridor (LCC), instead of a single path (Palmisano 2017). In order to evaluate the LCC between the origins a mean was calculated between the pairs of ACS considered and then only the values falling inside the tenth percentile were kept.

Looking at the LCC obtained for Gegharot and Aššur we can see that the first (Fig. 4a) locates a series of passes between Lake Urmia and the Northern Mesopotamia plain, like the Kelishin pass and the Gawre Shinke pass, that are attested to have been used at least during the Neo-Assyrian Kingdom. It is also interesting to note that a corridor is also located northward along the course of the Tigris and after having passed the Zagros it reaches the western shores of Lake Van and from there northward. The second corridor instead, is a lot more restrictive than the first and consider as viable a smaller area than the first (Fig. 4b), but it confirms the fact that the corridor alongside the western shores of Lake Urmia was preferable. It is interesting to note that the western shores of Lake Urmia could have been a preferable area for contact between the Southern Caucasus and Northern Mesopotamia, a role that seems to be confirmed by the archaeological record for the area that accounts for the presence of Southern Caucasian pottery alongside local productions (Danti, Cifarelli 2013: 205).

Moving on and considering the LCC between Gegharot and Ziyaret Tepe, they are similar: the two corridors run along a straight area that encompasses all the territories North of Lake Van. The most interesting element of the two corridors is the fact that in both cases a part of the corridor crosses from the Upper Tigris valley into the highlands at the location of the Lice-Genc pass, one of the passes that could have also been used in the LBA by the

Middle-Assyrian kings while campaigning into the lands of *Nairi*, as attested by Assyrian the rock inscriptions in its vicinity (Grayson 1991: 61).

From the two models that were presented it seem that Eastern Anatolia laid to the periphery of a supposed optimal path connecting the Southern Caucasus with the Assyrian heartland but there are some elements that must be taken into account: the first is that the way in which the contacts between the two region took place are not known and it is possible that rather than a direct contact, the different polities and people inhabiting the area between Lake Van and Lake Urmia played the role of intermediaries. Another element to be considered regards the fact that the models can reproduce only a part of the reality and cannot account for all its complexity but, nonetheless their comparison with historical and archaeological data can add some elements to the picture.

Conclusion

From the data presented it can be said that the comparison between the historical sources, the archaeological data and the LCPA shows that Eastern Anatolia, as well as the areas located on the western shores of Lake Urmia, played an important role for the contacts between Southern Caucasus and Northern Mesopotamia. However, it is still difficult to define these contacts and more research is needed. From an historical and an archaeological point of view the only solutions will be the increase in the quantity of data, while from the point of view of LCPA a possibility would be to keep on creating different models considering different elements, both natural and cultural, as well as increasing or decreasing the study area to test different possibilities.

Nonetheless, it is worth proposing a hypothesis regarding the relations between the Southern Caucasus and Northern Mesopotamia based on the all the data currently available. It is possible that, rather than a direct contact between the polities of Southern Caucasus, at least the one inhabiting its southern regions, and the polities of Northern Mesopotamia, that however cannot be excluded, these relations took place thanks to the mediation of eastern Anatolian polities. From the Assyrian sources it seems that the Assyrian kings were interested in some goods that they imported from the *Nairi* lands, usually as tributes (Grayson 1987: 272). Tiglath-Pileser I speaks of a tribute of horses and cattle (Grayson 1991: 22), as well as an instance in which he brought to Aššur obsidian, *hatu*-stone and hematite from *Nairi* (Grayson 1991: 29). Another text coming from Tell al Rimah and regarding a loan of tin clearly states the existence of tin coming from *Nairi* (Wiseman 1968: 183). Moreover, recent archaeometric studies (Degryse *et al.* 2020) proposed the Georgian region of Racha (Fig. 1) as one of the sources of the antimony used in glass-making both at Nuzi and in Egypt. These scanty textual and archaeometric evidence tell us that the near eastern polities had some kind of contacts, not only through war, with the *Nairi* lands and it could be possible that the polities of the Southern Caucasus could have come into contact with the former through the Eastern Anatolian polities, in a situation similar to the one that could be supposed for the sites at the western shores of Lake Urmia.

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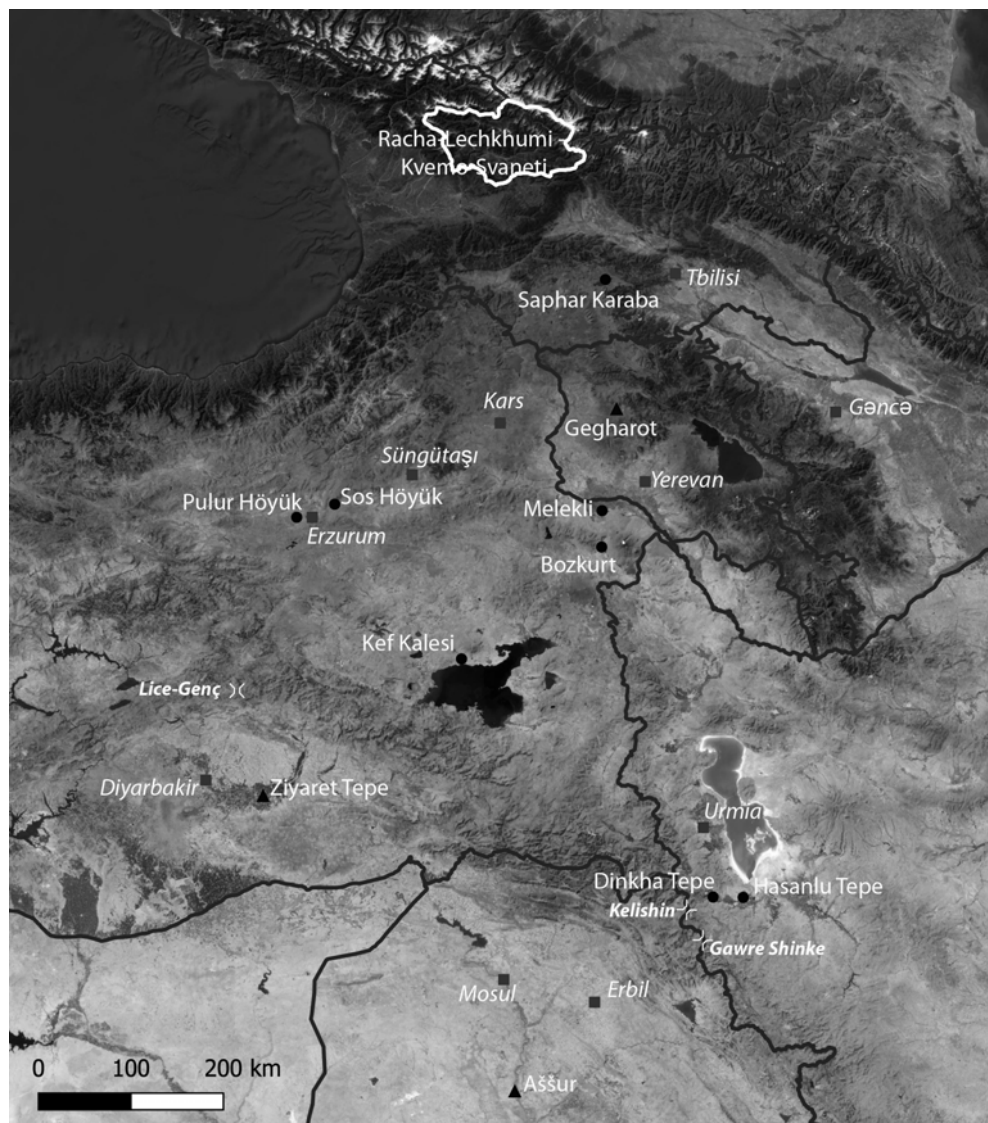


Figure 1. General map of the studied area with the locations of the places mentioned in the texts.

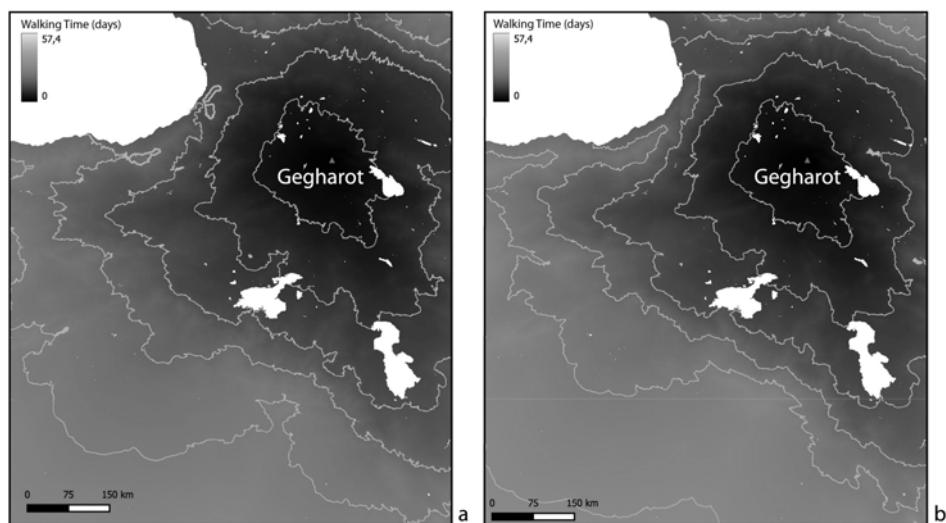


Figure 2. Examples of ACS with Gegharot as origin: (a) model without rivers as a cost; (b) model with rivers as a cost. The isolines are at an interval of five waling days.

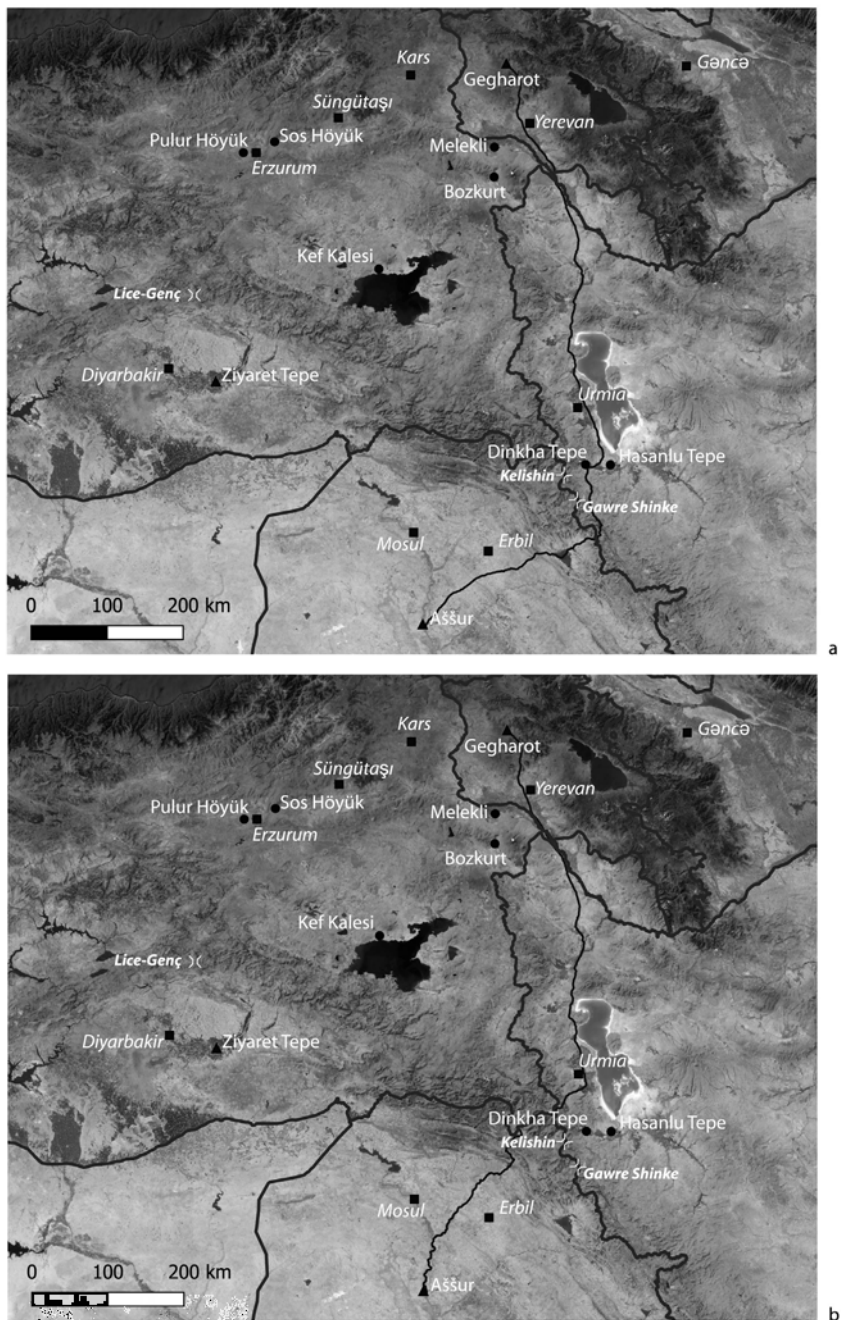


Figure 3. LCP calculated from Gegharot to Assur: (a) model without rivers as a cost; (b) model with rivers as a cost.

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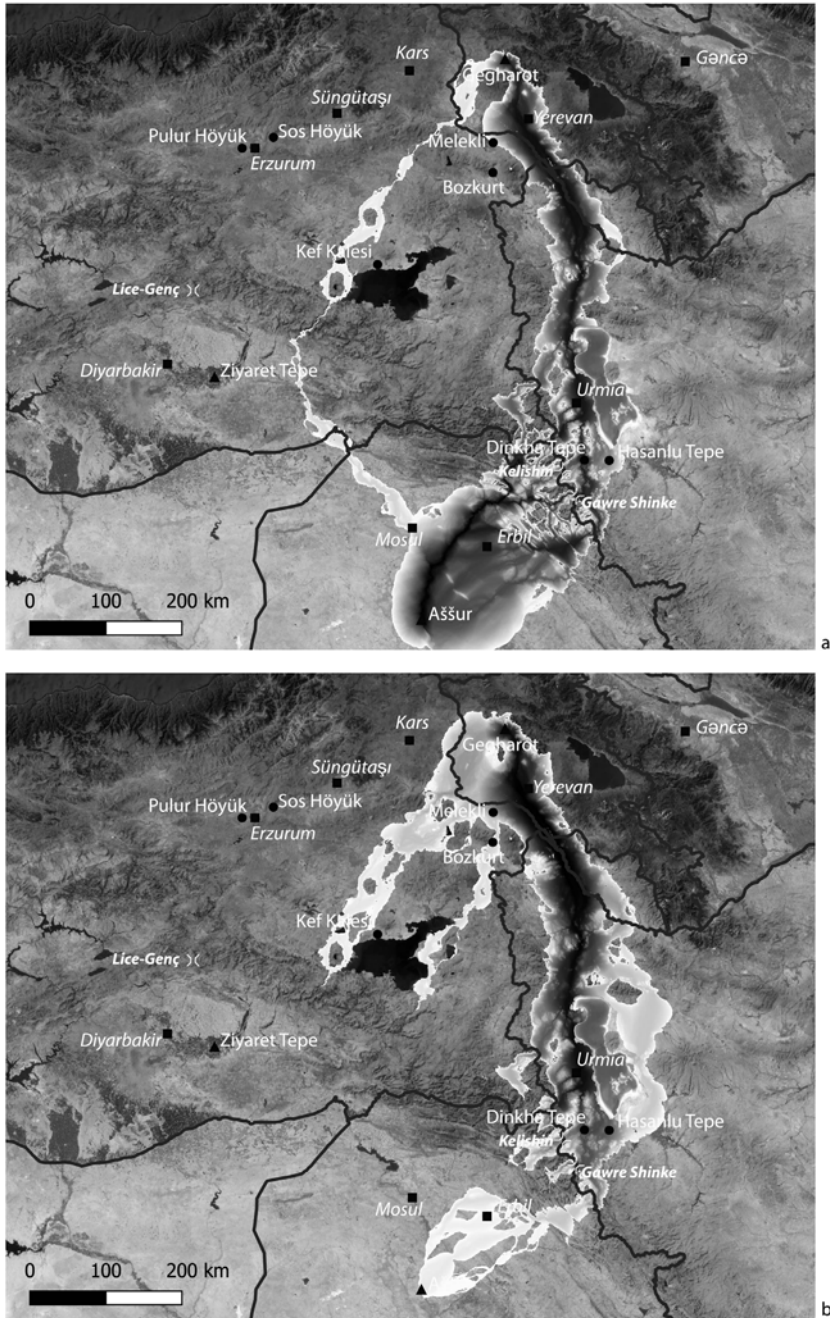


Figure 4. LCC calculated from Gegharot to Assur: (a) model without rivers as a cost; (b) model with rivers as a cost.

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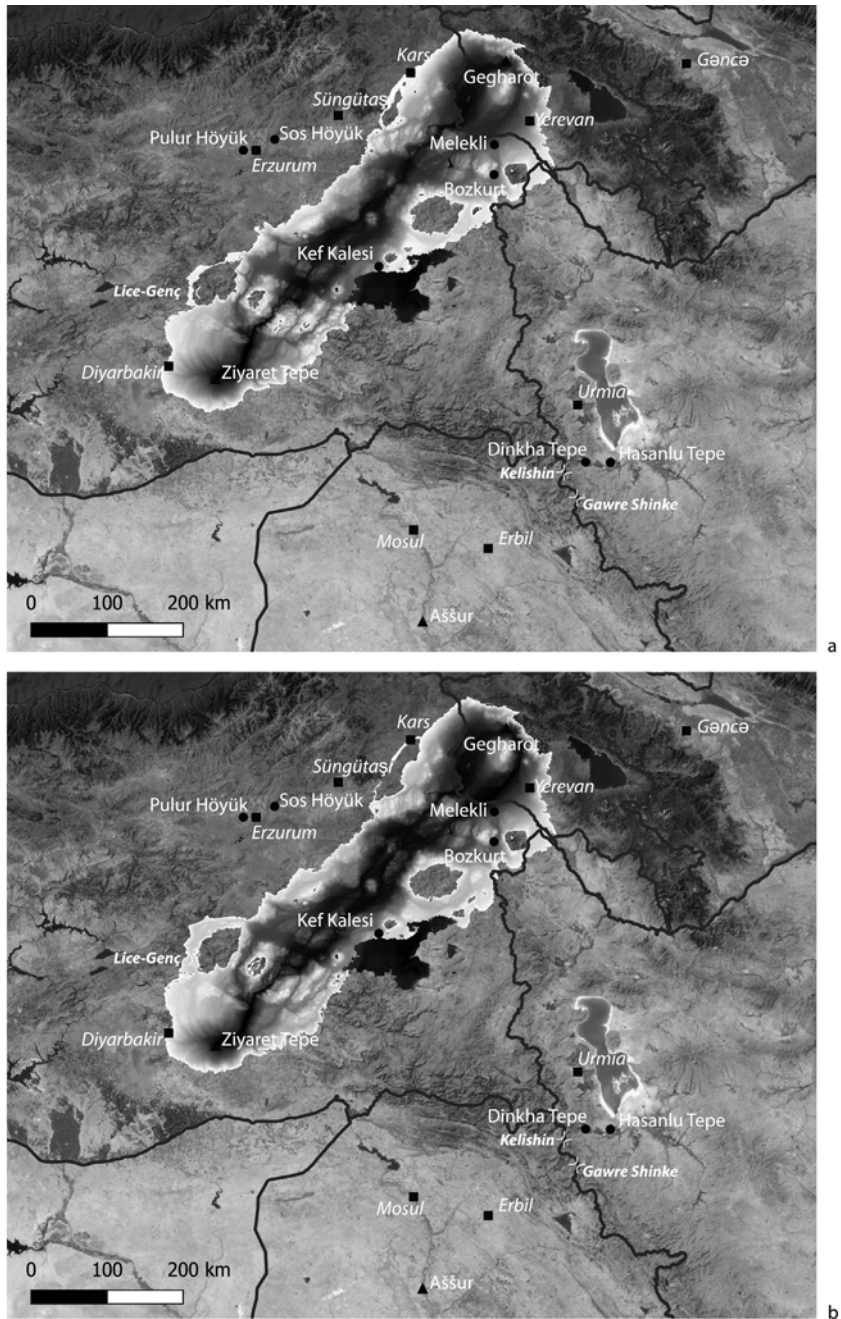


Figure 5. LCC calculated from Gegharot to Ziyaret Tepe: (a) model without rivers as a cost; (b) model with rivers as a cost.

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