Anatolian Rivers between East and West: Axes and Frontiers
Geographical, economical and cultural aspects of the human-environment interactions
between the Kızılırmak and Tigris Rivers in ancient times

A series of three Workshops

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First Workshop

The Connectivity of Rivers

Bilkent University
Faculty of Art, Design and Architecture
&
Faculty of Humanities and Letters
Ankara

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ABSTRACTS

Second Workshop, 4th – 7th May 2017, at the State University Shota Rustaveli, Batumi.

The Exploitation of the Economic Resources of Rivers.

Third Workshop, 28th – October 1st September 2017, at the French Institute for Anatolian Studies, Istanbul.

The Cultural Aspects of Rivers.

Frontier Rivers between Asia and Europe

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The concept of « frontier », the water resources and the extension of Europe/Asia are currently topics of debates to which ancient historians and archaeologists can bring their contribution. The aim of this paper is to draw attention to the watercourses which played a part in the mental construction of the inhabited world, in its division between West and East and, more precisely, between Europe and Asia. The paper is organized in three parts: the first is an inventory of the watercourses which have been considered, at some point in history, as dividing lines between Europe and Asia; the second part is an attempt to explain the need of dividing the inhabited world by streams; the third part assesses the impact of this mental construct on the reality of a river, which is normally at the same time an obstacle and a spine in the mental organization of a space.

1. The division of the ancient world, on geographic and historical grounds, was a matter of debate since Archaic times. The reason is that unlike in the modern definition of "continents", the ancient world was one island in itself and there was no agreement on how to cut it into two or three smaller islands. Ancient scholars, however, needed these slices in order to explain human diversity and historical events. But although everyone recognized that the Internal Sea (our Mediterranean and Black Sea, together with the Sea of Azov), with the Columns of Hercules (Gibraltar) were the major factors of division, there was no coherence between the identifications of the further channels which would have completely cut the two or three "continents" and make them islands in the Ocean. This clearly appears both from the variation of the names of the rivers used as dividing lines and from their identifications. The **Phasis** and the **Nile** were the first to be seen as major "frontiers"; however, unlike in modern geography, these hydronyms did not designate a unique flow during Antiquity. The problem of the Nile, its sources (to the south or to the west) and of its multiple mouths (parallel to the uncut isthmus of Suez) is extensively discussed by Greek and Roman authors (among whom Herodotus, Aristotle, Seneca), while defining Egypt, "gift of the Nile", between Asia and Libya/Africa. The fluctuation of the northern limit between Europe and Asia is less explicit. In fact, several rivers have been called "Phasis" by the Greeks, and this explains not only the wander of the Ten Thousand in Xenophon's *Anabasis*, but also the switch between the Don-Kertch Strait, the isthmus Caspian-Azov Seas and the Rioni as frontiers between Europe and Asia. The Rioni is for us "Phasis" *par excellence*. Nonetheless, other South Caucasian rivers (like the Aras, the Kelkit and the Çoruh) as well as the North Caucasian Kuban have been called "Phasis" by different ancient authors. The identification of the Kuban (Aristotle's **Hypanis**) as Phasis, in particular, explains the association of the Phasis and the Caucasus with the Cimmerian Bosporus, through Kuban's ancient delta (today Taman Peninsula). Kuban's flow north of the Caucasus also coincides with the isthmus between the Caspian and the Azov Seas, a real water basin millions of years ago, interpreted as a cut between Europe and Asia by Eratosthenes.

In addition to the Phasis, other rivers have been perceived as imaginary and even as real political frontiers between East and West. The case of the **Halys/Kızıl Irmak** is famous because of Cyrus' battle against Croisos at Pteria in 547 BC (in Herodotus). Yet, during the tumultuous history of the wars between Greeks, Romans and Byzantines against the Persians, Parthians and Sassanians, other rivers have been seen as symbolic thresholds for the two belligerents: the most known are the **Euphrates** (with its tributaries, including the Chaboras, cutting the Transeuphratene from the rest of Asia) and the **Tigris** (in the 2nd and 3rd centuries

AD). Their upper courses formed the Osrhoene, a zone of contacts but also of ruthless confrontations (if one thinks at the defeat of the Romans in Carrhae). In Byzantine times, several other water courses have been seen highly dangerous frontiers: to the West, the **Sangarios/Sakarya** marked the border between Byzantines and Seljuks, strongly disputed in the 13th century; until today, the **Hebros/Maritsa** represents the limit between Turkey and Greece, actual member of the European Union. To the East, the **Kydnos/ Tarsos çayı** and the **Orontes/Asi** have successively been seen as frontiers of Anatolia; until today, the Orontes corresponds to the frontier of Turkey with Syria, one of the hottest lines of separation between West and East.

2. During Antiquity like nowadays, these rivers were used as clear frames of the powers dominating Europe and Asia. Their crossing-points could be easily controlled from both sides and, under normal circumstances, no sudden inclusion passed unobserved. Moreover, unlike the mountainous chains – which could also play the part of "frontiers", like the Taurus in the treaty of the Romans with Antiochos III –, streams were clear demarcation lines for everyone. Strabo mentions river- and seacoasts as hard (although evolving) limits of lands: he does not refer only to political frontiers, but also to cultural demarcations, to be used in the construction of the mental world map. This preference for water can be explained by the ancient conception of the Ocean and the inhabited world: the island formed by the *oikoumene* was shaped by the Internal Sea – a golf of the Ocean penetrating deeply into the heart of the earth, through the Balearic, Tyrrhenian, Adriatic/Ionian, Cretan, Syrian, Aegean, Propontic, Pontic and Maeotic seas. The rivers separating the inhabited world were flowing into these seas from the Ocean or mountains close to the Ocean. Accordingly, they were channels between the Internal and the External Seas. Through them, the stream of the Ocean penetrated to the center; it exited the *oikoumene* through the Gibraltar straits, known from Aristotle onwards for its double flow. Although the *orbis terrarum* remained one – if one excludes the minor *alteres orbes*, like Britain –, its fragmentation could justify the generic differences and thus the conflicts between the Eastern and Western peoples. Therefore, the crossing of a stream, part of the cosmic Ocean, was occasionally connected to exceptional destinies which changed the whole world – through its unification (like Alexander) or through its disruption (like Xerxes).

3. Being a demarcation line between Europe and Asia did not prevent a water flow to be, at the same time, a connector – not only between North and South (for sailors), but also between East and West, for those who lived on its shores. Besides the **Halys/Kızıl Irmak** – whose role as a real political boundary between "Medes"/Iranians and Anatolian populations has been contested –, the **Tigris** and the **Euphrates** offer a good illustration of how settlements were established and developed on opposite shores, while these belong to the same empire or staged the opposition of rival powers. More suggestive are the topographies of the two Bosporus, the **Cimmerian (Kertch Strait)** and the **Thracian (Boğaz)**, both seen in Antiquity as "passages" (Greek *poroi*) and rivers: the Cimmerian Bosporus was presented as a mouth of the Tanais/Don at the exit from the Maeotic lake (Pseudo-Arrian), while the Thracian Bosporus could be identified with a mouth of the Borysthenes/Dnieper at the mouth of the Euxine Pontus/Black Sea (Stephanus of Byzantium). The Greeks occupied these straits since Archaic times, by fortifying the promontories from which they could not only take advantage of the connectivity and resources of waters and lands, but also keep an eye on each other. This is how one can explain the Ionian Archaic fortifications now excavated by the archaeologists on the ancient Island (*nesos*) of the Cimmerian Bosporus (in particular Akhthanisovskaja, Golubitskaja, Strelka, Red Oktober), as well as the whole colonial pattern,

from the European Kimmerion at the south-west, to the Asiatic Kimmerikon at the north-east extremity of the strait. On the Thracian Bosporus, the Megarians adopted an analogous strategy: the analogous toponyms on the Anaplous, in the territories of Chalcedon and Byzantium (already studied by Francis Vian) clearly show that a water flow, even one extremely difficult to cross, has always been an articulation, never an absolute barrier of the world.

Büklükale: A City of the 2nd Millennium BC at the Crossing of the Kızılırmak River

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1. INTRODUCTION

From ancient times rivers have been an obstacle for the communication, with crossing points only at limited points. Therefore, crossing points were always strategically very important. The ancient city Büklükale is situated at a major river crossing on the western bank of the Kızılırmak River, opposite the modern village of Köprüköy in Karakeçili, Kırıkkale province, approximately 60 km southeast of Ankara.

The dimensions of Büklükale are approximately 500 m wide on the west-east axis and extend about 650 m north and south. At the eastern part of the city center, there is a rocky mound, which is about 30 m high and 300 by 200 m in area. At the south of the rocky mound, there are two terraces and another one to the east. On each of the terraces, stone foundations that belong to large architectural structures are visible.

The Japanese Institute of Anatolian Archaeology has been excavating at Kaman-Kalehöyük since 1985 under the directorship of Dr. Sachihiro Omura, the director of the Institute, and has established a revised chronology for Central Anatolia. One of the most important results is to have identified the so-called “dark age” settlement that is early Iron Age. However, there is one problem. That is the lack of the sequence in the Hittite Empire period. The purpose of the excavations at Büklükale is to fill the gap of the chronology at Kaman-Kalehöyük.

The Japanese Institute carried out preliminary surveys at Büklükale in 1991, 2006 and 2008. Since 2009, the excavations have been continuing under my directorship and have provided critical information on the chronology of the site.

2. CHRONOLOGY AT BÜKLÜKALE

One of the excavation goals of Büklükale since 2009 was to establish the occupation history of the site. Excavations at the highest point of the rocky mound were conducted to better understand the stratigraphy of that area of the site and four strata were identified: the 4th Stratum of the 3rd Millennium BC, Early Bronze Age, the 3rd Stratum of the 2nd Millennium BC, the Middle Bronze Age (Assyrian Trading Colony Period) and the Late Bronze Age (Hittite Empire period), the 2nd Stratum of the 1st Millennium BC, the Iron Age and the 1st Stratum of the Ottoman period.

3. THE IMPORTANCE OF THE CROSSING AT BÜKLÜKALE

The city of Büklükale was situated at a major river crossing and throughout history, this city held strategically an important position.

Ottoman period

According to Orhonlu who researched the Ottoman history, the Seljuk bridge, Çeşnigir köprüsü, from the 13th century AD had the function of a “derbend (small fortress)”. Therefore,in the Ottoman period 50 soldiers for observation and protection were assigned and the ruin of a Han and rooms were repaired. Furthermore, a Islamic temple was built (Orhonlu 1967).

Seljuk period

Cte de Cholet stayed in the town Karakeçili at 25th July 1882 and at 26th he came from Karakeçili to the bridge and in front of it he recognized the ruin of a caravanserai and a Lion Statue made of white marble (Cte de Cholet 1892). Two Lion Statues are now at Ankara Ethnological Museum. Anderson recorded the modern Khan at the foot of the hill of Büklükale, as well as the foundations of a rectangular building constructed of large squared blocks beside it (Anderson 1899). Today none of these architectural remnants are visible.

Byzantine period

As to the Byzantine period, Ramsey described that the road crossing the bridge got its importance first in the Byzantine period as a "Byzantine Military Road," He supposed that there has been a fortress to protect the bridge at the crossing point of the river and it must have been "Saniana," the military center of the Turma Saniana. Moreover, he suggested that the fortress was first built on the west side of the river by Romanos Diogenes in 1063 (Ramsey 1890: 219). During our survey in 2009, we found the remnants of a Roman/Byzantine bridge beside the Seljuk bridge. However, the results of the excavation don't indicate the existence of a byzantine fortress.

Earlier period

The oldest information we can obtain, is the "Histories" by Herodotus. He explained that the Lydian king Croesus wended his way to Pteria by way of the Royal Road and got across the Kızılırmak River by bridge, when he made war against the Persian conqueror of the Median Empire (Ramsay 1890: 29). However, it was not written clearly, in which point of the Kızılırmak River he went over.

Regarding the earlier period, we have some clues of a bridge or something to support crossing the river. When the level of the river water is low, one can see some bored holes in the rocks along the river. They might have been used for constructing a bridge, or for some type of waterway controlling mechanism in earlier times, perhaps in the Achaemenid period or even older.

There is a stone paved road on the western foot of the site Büklükale. It was possibly part of the "Royal Road" of the Achaemenid period.

In the 2nd Millennium BC

The excavations revealed that the city of Büklükale was prosperous especially in the 2nd Millennium BC and a lower city was built, possibly a trading center. The excavations at the rocky hill demonstrate the interaction of Büklükale with other regions by the medium of various materials. Such a relationship was not only with the east: Mesopotamia, but also with the north: the Black Sea region.

The Kızılırmak in Hittite Times

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„The queen of Kanis gave birth thirty sons in a single year. She said as follows: „What a walkuwan have I borne!“ She placed them in reed baskets caulked with dung and set them on the river. And the river carried them to the sea into the land Zalpuwa. But the Gods took the babies from the sea and grew them up. As the years were passing by, the queen gave birth once more: Thirty daughters. She herself grew them up. . . The sons returned to Nesa (Kanis) . . . “ Then a big wedding was prepared - but in the last minute one of the sons recognizes his sister. „We should not commit such an outrage. . .“ he says – but the further story is broken off. So far the text from an old – Hittite tablet, found at the capital of the Hittite Empire, Boğazköy – Hattusa in 1970.

Kanis /Nesa is located near Kayseri. The river mentioned in the fairy tale should have been the Kızılırmak. The way of the baskets with the babies downstream the river can be easily reconstructed as follows: They reached the Black Sea in the land “Zalpuwa”, the Bafra ovası. Other texts mention “Zalpa” as an important city. After growing to manhood, the boys return to their home. No doubt, it is a typical fairy tale. But all these tales had a historical nucleus.

We learn from this text:

1. The Kingdom or principality of Kanis was ruled by a female ruler. Indeed, also other documents show, that at least sometimes a queen or princess had been at the head of the state in the early second millennium B.C.

2. The Kızılırmak played an important role in the consciousness of the people of this time. This river was seen as the natural connection of central Anatolia with the sea. Background of this knowledge was most probably definite experience - ¬ traffic at the river was possible and the Black Sea could really be reached by travelling downstream.

3. People also came upstream from the Black Sea region to the Anatolian Plateau.

Some scholars believe, this tale might reflect the immigration of the Hittites from the Eurasian steppe across the Black Sea to Anatolia during the third mill. B.C. We cannot prove this, but it seems not unlikely, that this Zalpa-Tale might be a sort of immigration or foundation myth of the Hittite rule in Anatolia. We don’t know, how the story is going on, because the lower part of the tablet is lost. But there are indications, that the young men, coming up from Zalpa, took over power in Kanis.

Similar myths telling about the abandonment of new borne children in a basked at a river, returning later and becoming important leaders, are also known from Mesopotamia (Sargon) and Egypt (Moses). Rivers take away small innocent babies and bring them back later as powerful persons – this is the common core of the story.

The Zalpa-Tale, today still not quite known in public, should be recognized as an important contribution to the early development of world literature. Its roots might go back to the 3rd mill. B.C. but the text is preserved in a copy from the 16 c. B.C.

The most ancient written sources concerning the Kızılırmak preserved as originals are cuneiform tablets, written in Old Assyrian language, found during excavations at Kültepe. Until now about 23 000 such tablets from the 19th/18 th c. B.C. were discovered in Kültepe but about three fourth of them are still unpublished. Due to this fact, only preliminary statements concerning the role of the Kızılırmak in these texts can be made. As most of the tablets are dealing with matters of trade, the river is mentioned always in context with economical activities, especially with the transportation of goods. For instance this text here:

"1/3 shekel of silver for the attorney, [. . shekels] for the bridge keeper – all this I paid in Kanes. From Kanes to Washaniya, [I paid] 10 shekels of tin [for] our lodgings and our provisions . . . From Washaniya to Ninassa [they took x]shekels of tin as nishatum – tax. . . . 1 mina of copper for the bridge – keeper . . All of this pertaining to Ninassa. . ."

In this text, published by Morgens Trolle Larsen in 2010, the expenses for a journey are listed. It started at Kanis, were the toll for a bridge nearby has to be paid. It should have been a bridge crossing the Kızılırmak. Then Washaniya was reached (we have no exact localization for this town) and later, having crossed the river once more, the traveller came to Ninassa, also without an exact localization. The toll for the second bridge leading to Ninassa is preserved in the text: 1 mina copper, that means half a kilo (exactly 495.44208 g). For this amount of copper 1.5 kg wool or ½ sheep could be bought.

Downstream, where the river became wider, analogous it became more difficult to erect a bridge. Transport was managed here by ferries. The use of such a ferry is documented in another text from Kültepe. Between Tuhpiya and Wahsusana the Kızılırmak was crossed by boat. The charge of the boatman was also 1 mina copper like the bridge toll upstream.

But how did these boats look like in this time? No wreck is preserved, but we have some models from the excavations at Kültepe. The models are made of pottery, often with the typical red slip at the surface. They always show more or less simple rectangular boxes with the head of a ram in front at the bow or stem.

Thousands of tablets from Kültepe always deal with caravans of donkeys. Sometime they also mention porters and wheeled carts for bulk transport. But regular river transport of goods is not attested at the Kızılırmak in this time, as far as I know. Some documents indicate a function of the river as a borderline between two city-states, like Kanis and Washaniya. But it seems, that customs duties were not common at these borders. The merchants normally payed their import tax when they arrived at the local palace. The fee for bridge crossing or the ferry "corresponded to the living costs of the keeper and maintenance of the structure" as Gojko Barjamovic pointed out. He also refers to a third bridge near the city of Samuha. The relevant text was published by Klaas R. Veenhof in 2006: "One shekel of silver in Hurma I gave to the caravanserai. (The costs of) the smuggling textiles I gave in Luhusaddia to Ikuppia, son of Daya. 3 shekels of tin [for . . .]his lodging . . [x shekels of tin] I gave [to / for . . .] at the bridge. [x shekels of t]in I gave to the caravanserai in Samuha. I gave 1 ½ shekel of silver as wages of a porter until Samuha. . . " Then the way headed to Hatipitra - Kutia - Hasanum - Karahna - Kuburnat. Here once more travel expenses are listed. The caravan came most probably from Assur via Hurma and Luhusaddia. Before reaching Samuha a bridge has to be crossed. Then the route continues until the final destination Kuburat. We should expect, that all these places lay at a line. But where can Samuha with its bridge be located?

Samuha was a very important city during the entire Bronze Age. Tablets from Kültepe listed this city in the 19th c. B.C. as a "Wabartum", a smaller trading point of Assyrian merchants, later, during the 18th c. B.C. its importance grew and it became a "Karum", a trading colony of Assur. But while most of these karū were burnt down during the 18th. c. B.C. and disappeared from the map, Samuha became even more powerful in the time of the Hittite Empire until its final destruction in about 1200 B.C.

There are lots of cuneiform documents, found in the Hittite capital Hattusa, dealing with Samuha. Since the very beginning of Hittitology, scholars are searching for Samuha. Especially one Hittite text played a decisive role in this lively discussion. It deals about river transport of grain to Samuha. According to this text Samuha lay at a navigable river. Most of the scholars were convinced, the only navigable river in Anatolia is the Euphratus, so Samuha has to be searched there. Only very few Hittitologists took also the Kızılırmak into consideration. In 1993 we begun excavating the Hittite site Kuşaklı about 80 km south of the

Kızılırmak. As a result of 12 seasons of excavation we can state, this site was a typical Hittite provincial town, founded in the last quarter of the 16th c. B.C. and finally destroyed ca. 1200 B.C. During the second season of excavation we were happy to discover a small archive of cuneiform tablets form the late 13th c. B.C.. According to these tablets and also hieroglyphic stamps on pottery it was possible to identify this site with the Hittite town Sarissa, already known for texts in Hattusa.

And now the decisive point is as follows: Several texts from the capital mention Sarissa together with Samuha and also with Hurma. These three towns should have been neighbours. After the definite localisation of Sarissa it became almost impossible, that Samuha laid at the Euphratus. It became clear, that the upper Kızılırmak was the region, we had to search for Samuha. But where was the exact place? On holydays during the excavation in Sarissa we sometimes went to the bank of the Kızılırmak for picnic and also to visit ruins. In 1999 I was fortunate to find a small piece of a tablet right on the surface of the site Kayalıpınar.

The text mentions indirectly a goddess, which was worshipped especially in Samuha, but also elsewhere. In my publication I formulated very carefully, this fragment might be a first indicator for a possible localisation of Samuha at Kayalıpınar. After it I was very astonished, that no one criticised me. Just the opposite: In various publications my proposal was immediately accepted and even more, it was taken as proved - but at this time it wasn´t by far proved. We started our excavations at Kayalıpınar in 2005. Ten years later we were happy to discover an archive with a complete series of documents, which show clearly, that Samuha was indeed the ancient name of Kayalıpınar.

The localisation of Samuha provides the decisive key to solve also other problems of the historical geography of the upper Kızılırmak – Region. This text from Hattusa for instance:

“The boats [brought] the harvest from Pitijarik to Samuha. They brought it one time and with the first tour [the cargo] was as follows: [4]00 utili- soldiers- breads, 600 kaskaean soldier breads, 16 parisu flour, [. . .]. Because the water became shallow, they unloaded the boats. Then the water turned (became deeper) and they loaded [the boats] again in Pitijarik; they put on the boats as follows: […] (and) 120 parisu barley. With a total of two tours 130 parisu spelt . . . “ The boats late arrived at Arzija and came finally to Samuha. The text is quite important in the context of our workshop: 1.We have here clear evidence for river transport at the Kızılırmak in the 13th c. B.C. 2. The boats were used for normal cargo, not just for fishing or ritual purposes. 3. The text mentions also problems: At some sections of the course of the river the water was too shallow for sailing with cargo. 4. Pittijarik, Arizija and Samuha lay all on the Kızılırmak. As the Number of Hittite sites in the region is limited all these Hittite cities might be located now.

It is also possible to reconstruct, at least partially, the old Assyrian itinary mentioned earlier. At least two stops on the way can be fixed definitely: Samuha and Karahna. But they will help to find the other stations mentioned in the text in future. The new Hittite texts from Samuha give as well more information about the Kızılırmak: the river played an important role in religion. Several rituals were celebrated at the banks of the river. But also ships and a bridge are mentioned in these texts according to Elisabeth Rieken, who works about the tablets. Not only in the 19th but also in the 13th century we now have evidence for a bridge crossing the Kızılırmak at Samuha. Unfortunately no traces of these bridges were found at the terrain up to now.

The name of the river was Marassanta or Marassantija in Hittite Times. On tablets from Hattusa this name is mentioned in a treaty text, written in Akkadian language (treaty between Suppiluliuma I and Sattiwaza of Mitanni, 14th c. B.C.) and also in mythological contexts, in rituals, and oracels. Of special interest is paragraph 22 of the Hittite Law: § 22:

“If a slave runs away and anyone brings him back—if he seizes him in the vicinity, he shall give him shoes; if on this side of the river, he shall give him 2 shekels of silver; if on the other side of the river, he shall give him 3 shekels of silver.” This means, that the course of the river had a certain importance in a juridical sense as a kind of borderline between two fare zones.

And last but not least I would like to drew your attention to a fragmentary text of the “Myth of the city Nerik”: “In former times the Marassanta flowed. .. but now the Weathergod has turned him. . “ This should be interpreted as an early description of the phenomenon of change of a natural stream channel. The Weathergod brought rain and a flood which caused a “turning”, that means changing of the river bed of the Kızılırmak, most probably in the region west of Vezirköprü.

To sum up:

As the longest river in Anatolia, the Kızılırmak played an important role in Hittite Times. Its significance was:

1. In the awareness of the Hittites this river was the connection line between the land of Hatti at the plateau and the sea and perhaps also with their original homeland.
2. Only in a very limited sense the river had a function as a borderline.
3. The Kızılırmak was navigable in Hittite times, even at its upper course in the Sivas region.
4. Traffic across the river was enabled by bridges, ferries and fords.
5. It was a holy river, rituals were celebrated at its banks.

Ancient Settlements in the Lower Kızılırmak Valley

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The study area is the Lower Kızılırmak Valley (41° 25′ - 41° 45′ N and 35° 38′ - 36° 09′ E) covering the delta, lower plateaus, mountainous steep slopes, and narrow deep tributary valleys of the Kızılırmak River (Fig.1). Archaeological surveys in the region determined 16 Bronze Age settlements, 10 Roman period settlements, and 18 tumuli (Alkım 1972, 1973, 1974, 1975; Alkım et al. 1988, Kızıltan 1992) (Fig. 2). In this study, answers to the following two questions were investigated by the geographic approach. Why did people choose to settle in this region? How did they live in this area? Geographic Information System (GIS) methodology was used for analysis. Topographic, hydrographic, soil, and geological databases were created using Map info software. Surface and spatial analyses were carried out using the same software.

The topographic database was used to determine the main geomorphological units and to carry out slope analysis. The Quaternary delta plain (Bafra Coastal Plain), Pliocene old delta levels, southern plateau surfaces and Lower Kızılırmak Gorge are the main geomorphological units in the study area (Turoğlu 2010). Slope analysis was conducted in four categories: 0-7, 7-11, 11-18 and 18+ degrees, which are the meaningful slope classes in terms of agriculture and settlement (Fig. 2) (Selassie 2015). The soil map was produced using the database and classified into five soil classes, as Brown forest soils, Brown podzolic soils, Hydromorphic soils, Collivial soils, Alluvial soils, mapped (Fig. 3).

Fig. 1: Location map of study area.

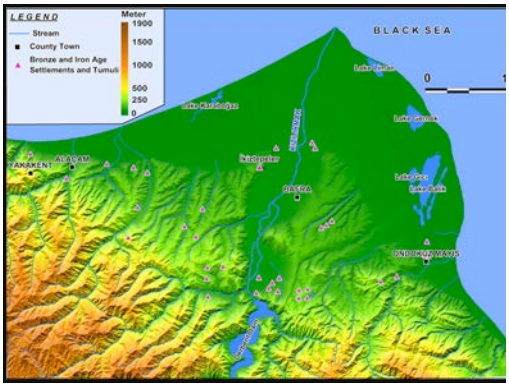

Fig. 2: Location of Bronze and Iron Age settlements and tumuli In region.

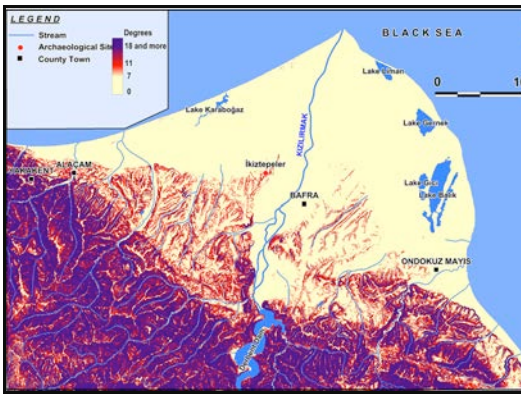

Fig. 3: Slope map of study area.

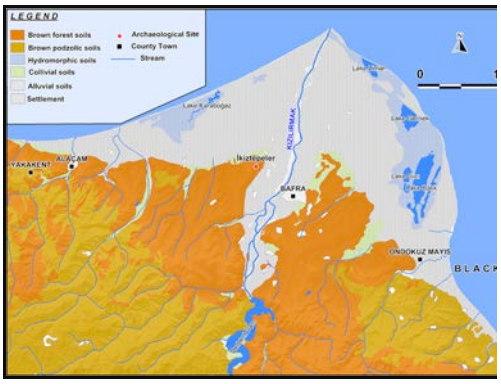

Fig. 4: Soil map of region.

As a result of analysis, the following assessments were obtained. Geographical conditions of the Lower Kızılırmak Valley played a decisive role in the choice of settlement in ancient times. Water (for freshwater sources), Geomorphology (for shape and elevation of surface features of the land), Climate (for temperature, precipitation, wind, humidity), Vegetation (Plant species and population density of plants) were all important geographical parameters for the selection of sites for settlement during the Bronze Age and Iron Age in the study area. Also, the Kızılırmak River played an important role in early settlements/civilizations due to its providing freshwater sources for drinking water, freshwater hunting and gathering, freshwater sources for agricultural irrigation, natural waterways and transportation, and protection against enemies. In addition, the Lower Kızılırmak River basins were also important in supplying the needs of early settlements/civilizations in many ways, including Agricultural areas (Delta, river terraces, alluvial valley floor, alluvial fans), Land gathering and hunting (high levels of plant species diversity, wildlife species and population richness), Raw materials (Forests for trees, Clay for pottery, Mines for metals), and Security of the city/settlement (High and steep slopes, Rough terrain, Deep and narrow valley systems, Ease of defense). The above evaluation can be regarded as the reasons for settlements gathering in the Lower Kızılırmak Valley during the Bronze Age and Iron Age.

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The Phasis River as a Trade Road[1]

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Domestic geographical conditions in any country are one of the factors shaping the formation of the system of transit transport arteries. For such a mountainous country like Georgia, of great importance were roads along the valleys and streams of the existing rivers.

Caucasus since ancient times was one of the bridges that connect Europe and Asia. From the point of view of the some Greco-Roman and Byzantine authors river Phasis was the border between this two continents.

The inclusion of the Caucasus, and Colchis into the system of international trade relations, especially after foundation of Greek colonies on the shores of the Black Sea, has determined the appearance transit routes of communication. Along the river Phasis lay important section of the trade route connecting West World with the East.

Phasis River (first mentioned in Hesiod., Theog., 940-942), is often listed among such great rivers of the *oecumene*, as the Euphrates, the Nile, the Ister, the Tanais, etc., and mentioned by almost all the Greek and Roman writers on Colchis,[2] is identified now by the most scholars with the modern Rioni River (lower and middle reaches) and its left tributary Qvirila (in current Western Georgia).[3]

The most clear evidence about navigation along the river Phasis one can found in Strabo's (XI,2,17; XI,3,4;), and especially Pliny's (Pliny, NH,VI,13) information, which describes the possibility of shipping from the mouth of the river to the fortress Sarapana. Last one even gives us the information about some details of the navigation for large and small vessels. Information of the same kind is contained in Anonymous Peripl. Pont. Eux., 41-43. Of great interest are also evidence from Tabula Peutingeriana and Cosmographia of Ravennatis Anonymi, which confirms reports of navigability of Phasis until the fortress Shorapani

The fortress of Sarapana is mentioned also in Byzantine sources (Procop. Caes., BP, I, 12; II, 29; Just., Nov., XXXI (XXVIII) and is identified with remains of city and fortress Shorapani situated at the confluence of the Qvirila and Dzirula, both tributaries of Rioni.

Navigation on the Phasis continued to the mid-19th century, as indicated by numerous reports of Turkish, Russian and European travelers. By his point of view very interesting is also one of the maps of Western Georgia, drawn in 1737 with explanatory legends related to the peculiarities of the navigation on the river Rioni.

Written sources on the use of Phasis as a trade route are date back to Strabo and Pliny, who consider this river as a segment of the trade route from India to the Black Sea. This evidence may derive. These data may have come from earlier, Hellenistic sources.

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[1] The large part of this communication is a kind of compendium of works of Otar Lordkipanidze, outstanding researcher of ancient Colchis, and is a sign of respect to his memory

[2] Full list of them can be found in the book of late Academician Otar Lodkpanidze published at the end of the last century Otar Lordkipanidze, Phasis. The river and the city in Colchis. Stuttgart 2000, pp. 13-15.

[3] In details see. Lordkipanidze O. Das alte Georgien (Kolchis und Iberia) in Strabon's Georgraphie. Amsterdam, 1996, S. 97-106.

The possibility of using this route for commercial purposes since the archaic and classical time has testified by archaeological finds in the Colchian hinterland. Finds of the Hellenistic period are even more abundant, and their range is much wider. In later times, archaeological materials are not as eloquent as in earlier periods, and therefore we have to rely on more literary and documentary evidence.

Parthenios (Bartin River)

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The Parthenios River (Bartın Cayı) constituted a natural border between Paphlagonia and Bithynia regions in ancient times. His name is mentioned frequently in ancient sources from 8th century B.C. Parthenios, as a river god, is depicted on coins of Amastris, which is the formal center of the region. These descriptions emphasize that Parthenios was important for the transport of commercial productions from the inner region to Black Sea. The river-god on coins holds an olive branch in his hand. S. Mitchell has mentioned this definition in connection with the Meles River in Ionia. Because the Meles River has been depicted with Homer portrait on Amastris coins too. So, what Meles is for Ionia, Parthenios is the same for Amastris. The olive branch in Parthenios' hand shows that it is important for commercial transport in the city. During the Ottoman era, the river is known to be a waterway that carried merchandise from the hinterland. Therefore, the Parthenios has been the most important commercial waterway for Amastris (and may be for Parthenia Kome/ Bartın City) from the Roman Period to the end of the Ottoman Period. Parthenius seen on milestones from Roman Period and Parthenia Kome mentioned in Early Byzantine Period, sign the same city in connection with the Parthenios River. This study aim firstly to give information about the Parthenios River , and then to find the source of Parthenios name and the finally to prove the presence of Parthenius or Parthenia Kome settlement.

Keywords: Paphlagonia, Parthenios River, Parthenia Kome, Bartın.

The Billaios River in the Ancient Times

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The ancient city of Tios / Tieion, on one of the transit points between Eastern Bithynia and Western Paphlagonia regions in the ancient period, is located today in the township of Filyos in the Çaycuma District of Zonguldak province in the western Black Sea region of Turkey. Tios lay at the mouth of the river Billaios and was also well positioned lying as it did along the river valley. The river was of central importance for the economy of Tios because it provided fertile land to the inhabitants along the river, access to the interior parts of Anatolia as the first 20km were navigable to boats of only a meter draft and it was used for the transport of agricultural products from the cultivated areas and timbers from forests. A flood in 2009 in the Gökçebey Region, on the southern border of Tios allowed the remains of a construction to come to light that calls to mind a customs warehouse near the Billaios River where it meets with the Devrek River. During a surface survey in the field in 2010 we found two inscribed lead weights under water. We are also aware of seven other lead weights of Tios which have the same features in terms of shape and inscription. At the beginning of September 2012 a rescue excavation was started in the area by the Karadeniz Ereğli Museum and Assistant Professor Şahin Yıldırım and many potteries items and amphora handles have been found. All these inscribed weights and potteries found in the area give us a clue about the function of the construction. Possibly the agricultural production of the valley and timber from the famous forests of the region were brought to this customs warehouse by boats or by road in order to be taken to the city center after the processes of weighing and payment of the taxes.

The "Nile Mosaic" of Palestrina: the Canopic branch as a borderline

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The common view of the ancient geographers concerning the limit of the three continents, Europe, Asia and Libya, was that the course of the Nile separated Asia, on its right, eastern, bank, from Libya, on its left, western, bank. This posed the problem of the nature of the Delta, which seemed to belong neither to Libya nor to Asia. That is why Greeks often call it "the island". This division in three continents with the Nile as boundary between Libya and Asia, even conceived at an earlier date, becomes common only with the Hellenistic science.

But previously, the Ionians had another way of thinking, a theory that Herodotus teaches us, even if he does not agree completely with it. For them, especially Hecataeus of Miletos, there were only two continents, Europe on the north and Asia on the south. In this case, Libya was only a modest part of Asia[4]. They added, according to their view, that "only the Delta was Egypt". This means that what we call "Upper Egypt" was not Egypt but it belonged to "Asia" or, as a southern country, to "Ethiopia". Indeed, in the far south, there was Ethiopia or, the land of the Ethiopians. As Pierre Schneider as masterly shown in his *magnum opus*, Ethiopia was a very large concept, which can run from the far east to the far west via all the southernmost part of the *oikoumene*[5].

In our contribution, we will try to show that the "Palestrina Nile mosaic" is a representation of Egypt which strictly follows this ancient "Ionian" conception, identifying the "Delta" with "Egypt" and "Upper Egypt" with "Ethiopia".

The "Nile Mosaic" of Palestrina

1) Provenance and conservation: sometime in the beginning of the 16th century, the mosaic was found inside a cellar of the Archbishop's Palace of Palestrina, ancient Praeneste in the Latium. This cellar was, in fact, an ancient grotto-like exedra cut inside the foot of the hill of the sanctuary of the *Fortuna Primigenia*. This situation explains its preservation from Antiquity to modern times. The mosaic was cut in pieces without any preliminary drawing and badly damaged during its removal, in the years 24 to 26 of the sixteenth century, from Palestrina to Rome, where it entered the collections of the Cardinal Francesco Barberini, and again during its way back to Palestrina, in 1640. Fortunately, drawings were made around 1630 for Cassiano del Pozzo, under supervision of Giovanni Battista Calandra. Kept today in the royal British collections of Windsor Castle, these drawings have preserved for us some of its genuine aspects, and over all they prevent us to take its present state as the original one.

[4] E.H. Bunbury, *A History of Ancient Geography among the Greeks and Romans from the Earliest Ages till the Fall of the Roman Empire*, I, Londres, 1879, p.137. J. Desanges, *Recherches sur l'activité des Méditerranéens aux confins de l'Afrique*, Rome, 1978, p.261, n.133 ; p.243. Cités par Schneider 2004, p.437, n.50.

[5] P. Schneider, *L'Ethiopie et l'Inde. Interférences et confusions aux extrémités du monde ancien (VIII^e siècle avant J.-C. – VI^e siècle après J.-C.),* Collection de l'Ecole Française de Rome, Rome, 2004, p.430 : « il n'existe pas d'univocité spatiale de l'Ethiopie » ; p.431 : « liée au thème du soleil, l'Ethiopie n'a par nature ni unité ni localisation précise ». According to Strabo, I, 2, 28, it is only the "modern geographers", *i.e.* those who succeeded the Hellenistic scholars, who restricted the word Ethiopians "*only to those who dwell in the south of Egypt*". Schneider 2004, p.429.

2) Date: The mosaic can be attributed with confidence to the last quarter of the second century BC, *ca* 120-110 BC, because of its clear integration into the unitary building project (sanctuary of Fortuna Primigenia on top of the hill and municipal buildings at the foot) managed by the local elite before the sack of the city by Sulla in 82 BC. It is, therefore, a Hellenistic monument. But we can add that the "model" of the mosaic was probably an original picture created in Alexandria in the early Ptolemaic Period, probably during the reign of the third Ptolemy, in the third quarter of the third century (246-221).

3) Subject: The mosaic obviously depicts an "Egyptian landscape" and, more precisely, an Egyptian landscape during the Nile flood. This very well known event occurred each year at the same time, in mid-summer, from - say - late June to late October, and it was used to determine the first of the three seasons of the Egyptian calendar, the ninety days running from July 19th, the Year-day, to mid-November, when the river has returned to its normal course.

L'inondation du Nil telle que la voyaient les Grecs et les Romains.

Earlier interpretations

The mosaic has generated a lot of divergent theories about the identification of the various places depicted on it. First of all, we will exclude the theory of an "imaginative" or "stereotyped" landscape. What we actually see is, I think, a combination of absolutely real features. Of course, some of them are corrupted by ancient inaccuracy (*e.g.* the exotic fauna) or by modern restorations (the "candelabra" under the processing tent), but this is not sufficient proof to accredit the wrong idea of an "idealized landscape", in the mood of, say, the Pompeii pictures, which are of much more recent, imperial, date.

The most frequently repeated interpretation is that the mosaic would show the entirety of the Egyptian land, from the first cataract, in the back, to the Mediterranean Sea, in the front. For instance, Danielle Bonneau, in her famous book on the Nile flood, divide the picture into four different strata respectively showing, in her mind, from top to front, Upper Egypt, Middle Egypt (from Edfou to Akoris…), Lower Egypt and finally the Mediterranean shore. This interpretation has been universally rejected and scholars agree that there are only three registers:

- The upper register: Ethiopia, recognizable by its negro hunters and various wild African beasts.
- The middle register: the river Nile.
- The lower register: the Delta.

Of course, the main problem has been: what part of the river is depicted in the middle register, on the line going from the "Greek temple with two obelisks and a Nilometer", on the left, let us call it the "***Nilometer temple***", to the "Egyptian temple with four colossi and an eagle", on the right, let us call it the "***Egyptian temple***"? We will limit our investigations to the only two scholars who proposed recent plausible interpretations of them, namely P.G.P. Meyboom and F. Burkhalter.

For Meyboom, the "Nilometer temple" is Elephantine (Aswan) and the "Egyptian temple" is Canopus. Consequently, the mosaic would show the totality of the Nile flowing from left to right, from the southern Egyptian boundary, at Elephantine on one side, to the northern boundary, at Canopus on the other side. This interpretation has a good point for it: the fact that most scholars agree, for – I think – good reasons, that the building on the right, the "Egyptian temple", must indeed be the Osiris temple at Canopus.

For Fabienne Burkhalter, the "Nilometer temple" is Memphis and the "Egyptian temple" is Elephantine. Consequently, the mosaic would show, in the reverse side, the Nile flowing from the southern Egyptian boundary, at Elephantine, but now on the right, to Memphis, the beginning of the Delta, on the left. She has indeed valuable arguments to deal with. She stresses, with very good reason, that the Greek temple with the obelisks on the left better fits the Greco-Egyptian character of Memphis than the purely Egyptian landscape of Elephantine proposed by Meyboom. Additionally, she observes (p.239) that, next to the "Egyptian temple", we see a town full of birds, obviously ibises, the birds of Thoth or, in the Greek language, the birds of Hermes, so that the town must be a Hermopolis. As soon as the most famous Hermopolis was Hermopolis Magna / Ashmunein in Middle Egypt, she concludes that the mosaic shows the Nile flowing in the reverse side, from right to left, and that the Egyptian shrine on the right must be a temple of Upper Egypt, namely the Khnoum temple at Elephantine.

New interpretation

In my opinion, the main problem of these two interpretations is this one: the middle register becomes a kind of map of Upper Egypt projected horizontally along its well known south-north axis, but the upper and lower registers, for their own, are panoramic landscapes depicted according to an east-west axis. This association of two very different ways of representation, two "cavalier views" and a "symbolic map", on the same picture, seems to me very implausible. That is why I come to my own interpretation.

I do think that the Palestrina mosaic depicts the course of the Canopic Branch of the Nile in summer, during the flood. This interpretation is by no means exceptional as soon as it takes as granted, in each of the two theories of Meyboom and Burkhalter, their own best proposition, namely, in Burkhalter's one, the "Nilometer temple" as Memphis and, in Meyboom's other, the "Egyptian temple" as Canopus. To be sure, we will add that the "Nilometer temple" on the left, while actually belonging to the region of Memphis, is not Memphis itself but *Ker Aha*, the modern Fustat or "old Cairo", a town known in Greek as "Neilos" (Hecataeus of Miletos) "Neiloupolis" (P.Oxy. XI 1380) or "Babylon of Egypt". Il was a Heliopolitan center, as the obelisks show, and here was situated the "cavern of the Nile", *i.e.* the Nilometer of Lower Egypt. This interpretation is confirmed by a look on the "real map", which shows a succession of places corresponding exactly with what we see on the mosaic: 1 Babylon / 2 a town which can be Momemphis (Imau) or Terenouthis / 3 Naucratis (expected on a Greek view of the Delta), / 4 the ibises of Hermopolis *Parva*, modern Damanhur (not Hermopolis Magna) / 4 Schedia (a ferry boat) / and finally 5 Canopus.

We can therefore reconstitute an unitary picture of the mosaic: it depicts the course of the western, Canopic, branch of the Nile, flowing from south-east to north-west, that is to say quite east-west, with, on the background, the left bank of the river and, on the forefront, its right bank, the inundated western Delta. Of course, this interpretation leads us to a big question: How the left bank of the Canopic branch, which is ordinarily called Libya, could be here depicted as Ethiopia? Is this an objection that invalidates our theory? We think no!

This means only that the "Delta Mosaic of Palestrina" is a picture of "Egypt" according to the ancient, Ionian, conception, as we described it at the beginning, which separated the Delta from the rest of the continental land, in this case "Ethiopia".

Why this way of thinking?

The answer is hidden in a famous Herodotean sentence, often misunderstood, the land of Egypt as a "gift of the Nile". For Herodotus the "gift of the river" was the northern part of Egypt, in other words "Lower Egypt", that is to say every land extending from "lake Moeris", *i.e.* the Fayum Lake, to the Mediterranean Sea. He added, probably the most important words in his mind, that this "gift of the Nile" was "all the land which the Greeks can reach by boat".

This "gift of the Nile", in other words all the Delta (plus the Memphis / Babylon region traditionally united with the Fayum depression) as a land added to the Nile valley, was an "island" separated from every other "continental" land, in this case "Ethiopia". It was a "land to take" and, at least at Ptolemaic times, it was actually a "Greek land". This is what the mosaic of Palestrina shows.

Let us finish with some considerations about what we call ancient "maps" of Egypt. A famous discovery has recently and totally "bouleversé" the question. I mean the discovery of the "Artemidorus papyrus", dated from the end of the Hellenistic period and reused as "papier mâché" in the First Century AD. It contains the most ancient map discovered, today, on a written "paper". Additionally the papyrus shows pictures of exotic animals which have been compared with those depicted on the Palestrina mosaic. As soon as the fragmentary

geographical text of the papyrus is a description of Iberia, scholars identified the related "map" as a Spanish map and its obviously pictured river courses as the different courses of the Guadalquivir. But Pierre Moret, as an accurate hispanist, disagreed with this interpretation and thought that the map showed a huge Delta and, perhaps, the Nile Delta. He was right and we do think that the "Artemidorus map" is indeed the most ancient "paper map" ever known and that it is a "Nile Delta map", as the Palestrina mosaic is a "Nile Delta mosaic".

What does it mean? The Nile, for ancient Greek writers, geographers and, above all, philosophers, was actually something like a reference for the understanding of the world. Its Delta became the first place; I mean the first territory, in the world, to be mapped in a "modern way". But the Nile was also the first river to be known by the Greeks as a watercourse open to sea vessels. This definition was never applied by them neither to the Rhone nor to the Danube, two very similar watercourses with a deltaic end, but which were never conceived by the Greeks as some continuation of the sea into the earth. It is only with the discovery of the Indus that they will have some comparative fluvial analogy with the Nile.

Therefore, the "Artemidorus Map" of the Delta can be compared with the "Palestrina Mosaic" of the Delta. The "Artemidorus Map" concentrates itself to the central river courses of the Delta, the Sebennytic, Phatnitic and Mendesian branches. It is an itinerary map showing the different ways leading the sea vessels up to Memphis. On the contrary, the "Palestrina Mosaic" concentrates itself to the external river, the Canopic branch, acting as a borderline between "Egypt" and "Ethiopia". It is an ideological map showing the separation between the land of the Greeks: the Delta as "Egypt", and "Ethiopia": the land of wilderness.

Water resources of Anatolia

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Anatolia has been the center of several civilizations since prehistoric times because of its strategic location. These civilizations used surface and groundwater actively. For example, large weirs and diversion dams and long canals were built later in Mesopotamia, to supply water over considerable distances across flat areas. From the Urartu period in Eastern Anatolia, there exist various remains of dams. Some of them are still in use for irrigation water. Roman Empire used hot water resources in western Anatolia for heating and treatment. One of the important irrigation projects in Anatolia was carried out during the Ottoman period. The Southeastern Anatolia Project (GAP) is a major and comprehensive initiative in Turkey. The GAP was perceived as a programme to develop water and land resources in the region and planned as a package that comprised of 13 individual projects on irrigation and energy production on the Euphrates-Tigris basins. According to the Turkish General Directorate of State Hydraulic Works (DSI), the total water potential of Turkey totals 234 billion m^3, and its gross potential of water available per capita per year, as of 2010, is about 1,600 m^3. The annual surface water potential is about 193 billion m^3. In addition to its surface water resources, the groundwater potential of Turkey has been a focus of numerous studies since 1956. It is estimated that Turkey's total annual groundwater resource is approximately 14 billion m^3. The total usable annual surface and groundwater potential of Turkey is 112 billion m^3. Groundwater has emerged as the most important source of water for industrial, agricultural domestic use in Anatolia. More than half of the drinking water resources in rural and urban areas of the Turkey, approximately one-third of the agricultural irrigation and a significant portion of the water used in the industry is supplied from groundwater.

Keywords: water resources, groundwater, irrigation and dam

The Kızılırmak River today

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The Kızılırmak River (Turkish for "Red River"), with a 1151 km length, is the longest river entirely within Turkey. The river starts its drainage from Kızıldağ (Turkish for Red Mountain) in İmranlı town of Sivas Province and drains an area of 78000 km2 into the Black Sea from its delta near Samsun Province. The Kızılırmak Basin encompasses 14 provinces with a total of more than 3 million population. The basin is a major ecologic, agricultural, economic and cultural hub for Turkey. The agriculture sector represents around 55% of the basin area mostly concentrated along the fertile alluvium of the river. Second major land cover in the basin is forest/semi-natural lands with a 42% coverage. Industrial investments are significant in the basin, especially concentrated in Kayseri and Kırıkkale provinces. Ecologically, more than 20 special protection areas are located within the basin, among which, the Kızılırmak Delta, Sultan Sazlığı (wetland) and the Lake Şeyfe are designated as RAMSAR sites. Energy sector is marked by seven (out of 33 dams) hydropower dams in the basin. Mount Erciyes and Cappadocia are the major landforms in the basin attracting tourists. The presentation will further detail the socio-economic impact of the Kızılırmak River on the local residents and in general on the region.