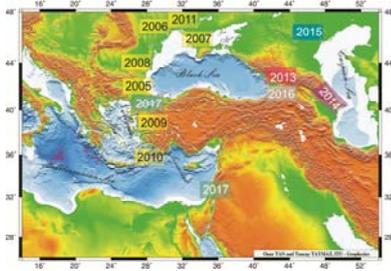




First Circular

Georgian National Academy of Sciences, Department of Earth Sciences
Iliia State University, Faculty of Natural Sciences and Engineering
2-9 October 2016



IGCP 610 “From the Caspian to Mediterranean: Environmental Change and Human Response during the Quaternary”

<http://www.avalon-institute.org/IGCP>

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AIMS AND SCOPE

The main goal of the IGCP 610 Project is to provide cross-disciplinary and cross-regional correlation of geological, archaeological, environmental, and anthropological records in order to (a) explore interrelationships between environmental change and human adaptation during the Quaternary, (b) create a networking and capacity-building structure to develop new interdisciplinary research initiatives, and (c) provide guidance to heritage professionals, policy makers, and the wider public on the relevance of studying the Caspian-Black Sea-Mediterranean Corridor ["CORRIDOR"] for a deeper understanding of Eurasian history, environmental changes and their relevance, as well as past and future impacts on humans.

The "CORRIDOR" is perfectly suited for these purposes. (1) It encompasses the large chain of intercontinental basins—the Caspian, Black (together called Ponto-Caspian), Marmara, Aegean, and Eastern Mediterranean (Levantine) seas—with their connecting straits and coasts. Here, sea-level changes are clearly expressed due to geographical location and semi-isolation from the World Ocean, which makes the "CORRIDOR" a paleoenvironmental amplifier and a sensitive recorder of climatic events. Periodic connection/isolation of the basins during the Quaternary predetermined their specific environmental conditions and particular hydrologic regimes, and thus, the area, and especially the Ponto-Caspian, represents a "natural laboratory" to study the responses of semi-isolated and isolated basins to GCC. (2) It has rich sedimentary and geomorphologic archives that document past environmental changes. (3) It has a substantial archaeological, anthropological, and historical record. (4) It is easily accessible for study.

To achieve the main goal and objectives, the Project incorporates six dimensions, each addressed by integrating existing data and testing of hypotheses: 1. The geological dimension examines the sedimentary record of vertical sea-level fluctuations and lateral coastline change. 2. The paleoenvironmental dimension integrates paleontological, palynological, and sedimentological records to reconstruct paleolandscapes. 3. The archaeological dimension investigates cultural remains. 4. The paleoanthropological dimension studies responses of different Homo species to environmental change. 5. The mathematical dimension provides GIS-aided mathematical modeling of climate and sea-level changes, and human dispersal linked to paleoenvironmental variation that can be meaningfully compared with current global changes. 6. The geo-information dimension grasps the "big picture" of geoarchaeological events over the duration of the Quaternary. Particular attention will be given to synthesizing the wealth of literature published in local languages, stored in archives, and largely unknown or ignored in the West.

Study sites include the Caspian, Azov-Black Sea, Marmara, and Eastern Mediterranean. These sites are characterized by rich sedimentary, geomorphological, archaeological, paleoanthropological, and historical records providing a superb opportunity to assess the influence of climate and sea-level change on human development.

Six Plenary Conferences and Field Trips are planned in the following regions: 2013 – Western Georgia; 2014 – Azerbaijan and Russia (Dagestan); 2015 – Russia (Northern Caspian and Manych Outlet); 2016 – Eastern Georgia (Inner Kartli and Kakheti regions); 2017 – Israel (Eastern Mediterranean), Turkey (around the Sea of Marmara), and/or possibly Turkmenistan (under consideration). They are scheduled for the third quarter of each year. Prior to each Conference and Field Trip, the Conference Proceedings and Field Trip Guide are prepared. Each Plenary Conference provides a forum for dialogue between multidisciplinary specialists in the Quaternary history of the "CORRIDOR" and other workers in related areas. The Field Trips follow the Plenary Meetings (Fig. 1).

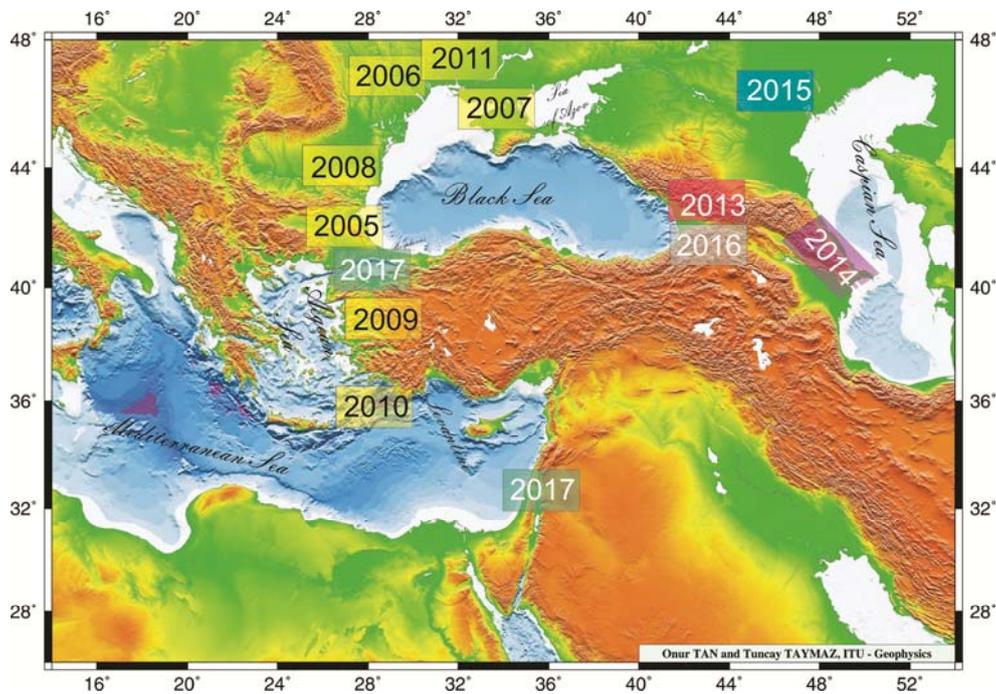


Figure 1. The Caspian-Black Sea-Mediterranean “CORRIDOR”: in yellow are the locations of IGCP 521-INQUA 501 meeting and field trip sites (2005-2011); in other colors are sites to be studied by the present IGCP 601 Project: 2013 – Tbilisi, Western Georgia; 2014 – Baku, Azerbaijan; 2015 - Astrakhan’ (Volga Delta), Russia; 2016 – Tbilisi, Eastern Georgia; 2017 – Haifa, Israel, and Istanbul, Turkey.

They are focused on observation of geological characteristics of Quaternary stratotypes as well as key archaeological and paleontological sites. All of them are easily accessible for study and can be sampled during the Field Trips for further investigation in various laboratories around the world.

The Fourth Plenary Meeting and Field Trip will focus on the pre-Pleistocene and Pleistocene geological history of the Eastern Paratethys remnants within Eastern Georgia. This subject is very important in shedding light and achieving a better understanding of a possible mechanism of separation of the Eastern Paratethys into the individual seas leading to formation of the Black and Caspian Seas.

It is expected that meeting will bring together multidisciplinary scientists from all over the world to enhance the West-East scientific dialogue and provide a foundation for collaboration on correlation and integration on the subject of the conference as previously IGCP 610 meetings have done.

The meeting will cover eight days. Two days (3-4 October) will be spent in plenary session, and four days (5-8 October) will be dedicated to the field trips.

SCHEDULE

2 October: Arrival and Registration (accommodation in Tbilisi).

3-4 October: Plenary Sessions (accommodation in Tbilisi).

5 October: Field Trip 1: Tbilisi – Grakalianis hill - Upliscixe – Mtskheta – Tbilisi. Conference Diner (accommodation in Tbilisi).

6 October: Field Trip 2. Tbilisi – Ujarma – Gombori pass –Alaverdi – Tsinandali – hotel “Kachreti-Ambassador”. Wine-test in the historic wine cellar in Tsinandali (accommodation in the hotel «Kachreti-Ambassador»).

7 October: Field Trip 3. Hotel “Kachreti-Ambassador” – Shiraki plain – Vashlovani National Park - hotel «Kachreti-Ambassador» (accommodation in the hotel «Kachreti-Ambassador»).

8 October: Field Trip 3. Hotel “Kachreti-Ambassador”; IV – Hotel “Kachreti-Ambassador” – David Gareji half-desert – Tbilisi (accommodation in Tbilisi).

9 October: Departure from Tbilisi.

TECHNICAL SESSIONS

The final number of plenary sessions will depend upon the number of participants and accepted presentations. To be accepted, each presentation must deal with results obtained from the study of environmental change and human response during the Quaternary and pre-Quaternary in the CORRIDORS. It can also have a more general scope, for example, GIS-based modeling of the water exchange between adjacent basins; evolutionary mechanisms of the Eastern Paratethys and its separation into the Black Sea and Caspian Sea, etc. Presentations that go beyond data description to address interpretation and broader understanding of the chosen topic are especially encouraged.

Exemplary Subjects:

- Ponto-Caspian as a relict of the Eastern Paratethys
- Quaternary and upper Neogene paleontology, palynology, and stratigraphy of the CORRIDORS
- Recent ecosystems of the Mediterranean, Caspian, and Black Seas
- Role of active tectonics in dividing the Eastern Paratethys into separate basins
- Archaeology, ethnography, and paleoanthropology of the CORRIDORS
- Paleoenvironmental and paleogeographic reconstructions
- Climate modeling
- Sea-level and salinity modeling
- Modeling of environmental change and human dispersal during the Quaternary

FIELD TRIPS

STRUCTURE AND GEOLOGICAL EVOLUTION OF THE CAUCASIAN SEGMENT OF THE PONTO-CASPIAN

The Caucasus represents a Phanerozoic collisional orogen formed along the Euro-Asian North continental margin, in a NW-SE direction, between the Black and Caspian seas and connecting the European and Asian branch of the Alpine-Himalayan mobile belt. The Caucasus already assumed its modern geological structure in Quaternary time. It consisted of three geotectonic units: mobile zones of the Greater Caucasus, the Lesser Caucasus, and the intra-Caucasian micro-continent (Fig. 2).



Figure 2. Physical map of the Caucasus and adjacent areas of the Ponto-Caspian region.

Because of its easy terrain and favorable climate, the intra-Caucasus depression is the most accessible natural corridor between the Black and Caspian seas, thereby linking Europe and Asia. This depression is protected from the invasion of northerly cold air masses by the Greater Caucasus Range and from southerly hot and dry air masses by the Lesser Caucasus. This segment of the Caucasus

preserves climatic conditions that favor the development of biotic populations, including humans, and this is the reason why the area was inhabited by early hominids since the Early Pleistocene. This is supported by remains of numerous Paleolithic age sites testifying to the occupation of the area throughout the Quaternary. At the same time, intense geological processes, including volcanic activity, were quite intensive in this period most definitely affecting early hominids.

The structure and geological evolution of the Caucasian segment of the Ponto-Caspian region are largely determined by its position between the still converging Eurasian and African-Arabian lithospheric plates, within a wide zone of continent-continent collision. It was formed after a long closure process of the proto-, paleo- and neo-Tethys; therefore, terrains of different age and history have taken part in its construction. From the late Miocene (10-8 million years ago), intensive exhumation of the Caucasus orogen began, during which molasse, lacustrine, and sub-aerial volcano-sedimentary formations were accumulated (Gamkrelidze, 1986).

Georgia occupies a large part of the Caucasian Segment of the Ponto-Caspian region, including the southern slope of the Greater Caucasus and the northern slope of the Lesser Caucasus; this accounts for its richness in geological and archaeological sites. As such, the region represents a promising laboratory for the study of environmental changes and human responses during the Quaternary.

Starting from ca. 9-7 Ma and as far as the end of the Pleistocene, in the central part of the region, volcanic eruptions occurred in subaerial conditions going on simultaneously with the formation of molasse troughs and the accumulation of coarse molasse. All major depressions in Eastern Georgia (e.g., Mtkvari/Kura and Alazani) are filled with sediments of the Miocene, Pliocene, and Quaternary age (Fig. 3).

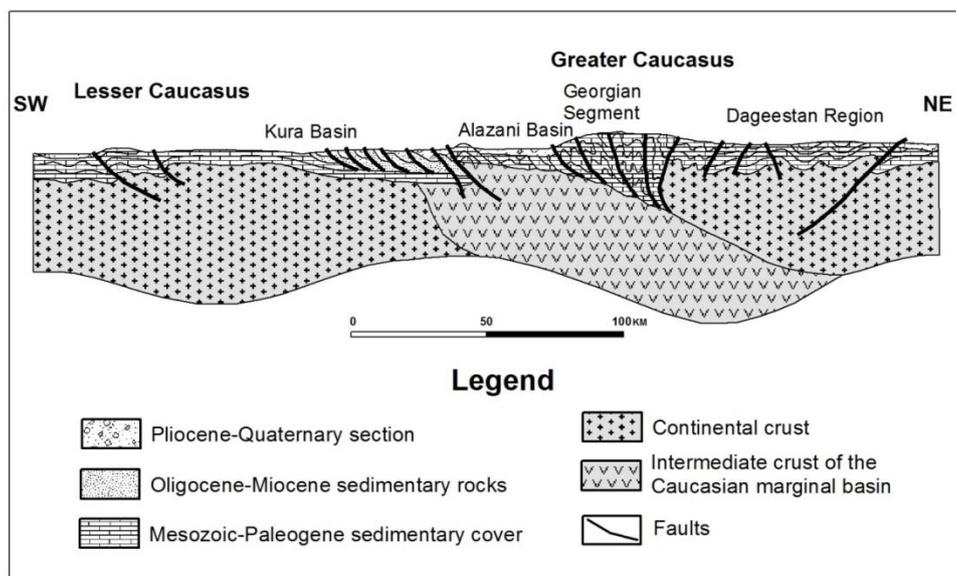


Figure 3. Simplified lithospheric cross-section of the Eastern Caucasus orogen, adapted according to Philip et al. (1989).

In these depressions the latest stage of Pliocene (Akchagylian) and the earliest stage of the Quaternary (Apsheronian) are of a particular interest for better understanding of the Pliocene-Quaternary boundary. These stages are represented by continental and shallow marine molasse with maximal thickness ~1500 m unconformably overly older rocks (Buleishvili, 1960). Continental facies are dominated by conglomerates with insignificant sandstones and sandy clays, and occasionally thin layers of volcanic ashes (Gamkrelidze 1964). Marine facies are represented by sandy and clayey rocks in the lower part, and sandstones and conglomerates in the upper part of the sections (Gamkrelidze, 1964; Azizbekov, 1972). They contain endemic brackish molluscs of Caspian type, ostracods, foraminifers, and mammals (Eastern Paratethyan, 1985).

One of the most informative geological sections for dating and correlation of the Akchagylian stage of Eastern Georgia is the Kvabebi section located in the Kura molasse depression. It is represented by littoral marine sediments enriched with remains of mollusks, ostracods, and foraminifers (Vekua,

1972; Eastern Paratethyan, 1985; Chkhikvadze et al., 2000). The lower and middle parts of the section contains marine forms while in the upper horizons include freshwater mollusks and ostracoda. Based on fossils, the Akchagylian stage can be correlated with Kuyalnikian and Piacenzian stages of the Pontic and Mediterranean regions, respectively. Magnetostratigraphic measurements allow attributing this stage to the Gauss epoch of normal polarity, whereas radiological dating of volcanic ash from the middle part of the section provides figures around 2.55 Ma (Eastern Paratethyan, 1985).

Pleistocene-Holocene deposits of the section are represented by shallow marine and continental facies. The former are attributed to the Caspian Sea domain and consist of fine-, medium-, and coarse grained terrigenous (clay, sand, sandstone, gravelstone, conglomerate, volcanic ash) sediments with shells of mollusks. Their thickness ranges between ~150 and 1000 m. The amount of coarse-grained clastics grows from the axial zone of the foreland towards its borders where marine facies are replaced by continental ones with remains of mammals (Buleishvili, 1960).

During the field trips in Eastern Georgia (Fig. 4), large sequences of freshwater-continental sediments of the Miocene, Pliocene, and post-Pliocene that fill all major depressions of Kartli and Kakheti depressions will be observed.

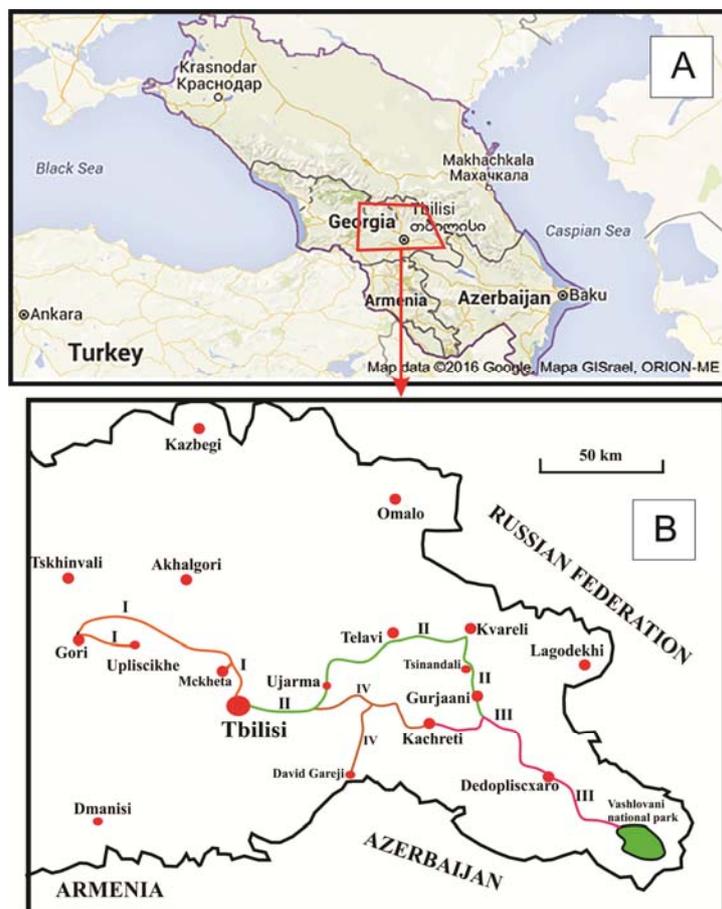


Figure 4. A - Map of the Black Sea; B – Map of Georgia with routes of field trips: I – Tbilisi – Grakalianis hill - Upliscixhe – Mtskheta – Tbilisi; II – Tbilisi – Ujarma – Gombori pass – Alaverdi – Tsinandali – hotel “Kachreti-Ambassador”; III – hotel “Kachreti-Ambassador” – Shiraki plain – Vashlovani National Park – Hotel “Kachreti-Ambassador”; IV – Hotel “Kachreti-Ambassador” – David Gareji half-desert – Tbilisi.

Field Trip I (5th October): Tbilisi – Grakalianis hill -Upliscixhe – Mtskheta – Tbilisi.

The Mtskheta – Uplistsikhe area is represented by lower, upper Miocene, and Pliocene sediments with rich fauna of mollusks. The former consist of yellow-gray, massive, loose, fine-grained, non-carbonate sandstones with lenses of thick sandstone, mottled clays with basal conglomerates, massive fine grained quartz-feldspar sandstones and siltstones with clay interlayers. The latter is represented by light gray and bluish-gray calcareous poorly laminated clays with rare interlayers of strongly

calcareous light-gray sandstone with rich fauna. The Pliocene is represented by thick packs of poorly sorted conglomerates with interlayers of clay, loamy and coarse-grained sandstones (Buleishvili, 1960).

Stop I.1. Jvari Monastery is a sixth century Georgian Orthodox monastery near Mtskheta, Eastern Georgia. Along with other historic structures of Mtskheta, it is listed as a World Heritage site by UNESCO. It stands on a rocky mountaintop at the confluence of the Mtkvari and Aragvi rivers, overlooking the town of Mtskheta, which was formerly the capital of the Kingdom of Iberia (Fig. 5).



Figure 5. Jvari Monastery Area. Mtskheta – the old capital of Georgia in the background.

Stop I.1. Graklianis Hill is an archaeological excavation site in Eastern Georgia near Kaspi showing evidence of human presence possibly going back 300,000 years. The site was discovered by students and faculty of Tbilisi State University in 2007. The site contains a temple to a fertility goddess from the seventh century BCE, a pit-type burial cemetery from the early Bronze Age, and the remains of a building from around 450-350 BCE; the building consists of three rooms with three storage rooms. The site had been occupied between the Chalcolithic and the Late Hellenistic periods. In 2015, a mysterious script was discovered on the altar of a fertility goddess's temple, predating those previously known in the area by at least a thousand years (Fig. 6).



Figure 6. Mysterious script etched on the side of a collapsed stone altar at the ancient temple site of Grakliani in Georgia.

These inscriptions differ from those at other temples at Grakliani, which show animals, people, or decorative elements. The script bears no resemblance to any alphabet currently known, although its letters are conjectured to be related to ancient Greek and Aramaic. The inscription appears to be the oldest (7th century BC) native alphabet to be discovered in the whole Caucasus region.

Stop I.2: Uplistsikhe – "The Lord's Fortress" is an ancient rock-hewn town in Eastern Georgia some 10 km east of the town of Gori. Built on a high rocky prominence on the left bank of the Mtkvari River, it contains various structures dating from the Early Iron Age to the Late Middle Ages, and is notable for the unique combination of various styles of rock-dwelling cultures from Anatolia and Iran, as well as the co-existence of pagan and Christian architecture. Uplistsikhe is identified by archaeologists as one of the oldest urban settlements in Georgia. Strategically located in the heartland of the ancient kingdom of Kartli (or Iberia as it was known to the Classical authors), it emerged as a major political and religious center of the country. The town's age and importance led medieval Georgian written tradition to ascribe its foundation to the mythical Uplos, son of Mtskhetos, and grandson of Kartlos. With the Christianization of Kartli early in the 4th century, Uplistsikhe seems to have declined in its importance and lost its position to the new centers of Christian culture – Mtskheta, and later, Tbilisi. However, Uplistsikhe reemerged as a principal Georgian stronghold during the Muslim conquest of Tbilisi in the 8th and 9th centuries. The Mongol raids in the 14th century marked the ultimate eclipse of the town. The Uplistsikhe cave complex (Fig. 7) has been on the tentative list for inclusion within the UNESCO World Heritage program since 2007.



Figure 7. Uplistsikhe - ancient rock-hewn town in Eastern Georgia. Caves were cut into the Lower Miocene quartz sandstone.

Stop I.3: Mtskheta is one of the oldest cities of Georgia. It is located approximately 20 km north of Tbilisi at the confluence of the Aragvi and Mtkvari rivers. Mtskheta was founded in the 5th century BC. It was capital of the early Georgian Kingdom of Iberia (Kartli) from the 3rd century BC to the 5th century AD. It was a site of early Christian activity, and the location where Christianity was proclaimed the state religion of Kartli in 337. It remains the headquarters of the Georgian Orthodox Church. King Dachi I Ujarmeli (early 6th century AD), who was the successor of Vakhtang I Gorgasali, moved the capital from Mtskheta to the more easily defensible Tbilisi according to the will left by his father. However, Mtskheta continued to serve as the coronation and burial place for most kings of Georgia until the end of the kingdom in the 19th century. The old city lies at the confluence of the rivers Mtkvari and Aragvi. From the Bronze Age until the prosperous Christian era, Mtskheta represents a rare mixture of cultural and spiritual values. This has created a unique eclectic lifestyle and mood within the town, which is as old as the history of Georgia itself. Mtskheta is the most religious city of Georgia, as it has been the shrine of pagan idols since times immemorial, and it is where Christianity in Georgia takes its origin. Svetitskhoveli Cathedral (11th century) (Fig. 8) and Jvari Monastery (6th century) in Mtskheta are amongst the most significant monuments of Georgian Christian architecture, and are historically significant in the development of medieval architecture throughout the Caucasus .



Figure 8. Svetitskhoveli Cathedral (11th century). Jvari monastery in the background.

Svetitskhoveli, known as the burial site of Christ's mantle, has long been the principal Georgian church and remains one of the most venerated places of worship to this day. Svetitskhoveli is listed as a UNESCO World Heritage Site along with other historical monuments of Mtskheta.

In the outskirts of Mtskheta are the ruins of Armaztsikhe fortress (3rd century BC), the Armaztsikhe acropolis (dating to the late 1st century BC), remains of a "Pompey's bridge" (according to legends built by Roman legionnaires of Pompey the Great in the 1st century BC), the fragmentary remains of a royal palace (1st–3rd century AD), a nearby tomb of the 1st century AD, a small church of the 4th century, the Samtavro Monastery (11th century), and the fortress of Bebris Tsikhe (14th century).

FIELD TRIPS IN EASTERN GEORGIA KAKHETI REGION (Fig. 9).



Figure 9. General view of the Kakheti region from Tsiv-Gombori Range. Alazani Valley and the Greater Caucasus are in the background.

Field Trip II (6th October): Tbilisi – Ujarma – Gombori pass – Alaverdi – Tsinandali – hotel “Kachreti-Ambasador”.

In Kakheti, the Ujarma, Tsiv-Gombori Range is represented by lower and upper Miocene, and Pliocene. The former is mainly represented by dark gray and brownish-gray calcareous clays, sandstone with quartz fragments, thick coarse-grained sandstones, and microconglomerate interlayers with rich microfauna. The latter is represented by bluish-gray and gray clays, thick coarse-grained calcareous sandstones, oolitic limestone with numerous fauna and conglomerates. The Pliocene is represented by continental deposits, such as conglomerates with interbedded layers of clays and loams. To the southeast, they are replaced by freshwater-continental sediments (Buleishvili, 1960; Gamkrelidze, 1964).

Stop II.1: Ujarma Fortress was established by King Vakhtang Gorgasali in the 5th century, and was the second capital of Georgia until the 8th century. King Vakhtang Gorgasali is believed to have died there after he was wounded in battle against the Persians. The fortress consisted of two parts: the Upper Fortress (the Citadel) located on the plateau of the rocky hill and the Lower City on the slope. A royal palace, consisting of a two-storey building, was located in the eastern part of the Citadel. The Upper Fortress was destroyed in the 10th century by the Arabian conqueror Abul Kassim but was restored in the 12th century by King George III who used it as a treasury. The fortress was originally surrounded by powerful protective walls with nine towers (Fig. 10).



a



b

Figure 10. Ujarma Fortress (a) and Castle (b). Parts of the walls remain, together with several ruined towers that originally had tiled roofs. In the middle part of the citadel is the two-storey Jvari Patiosani Church (Church of the Fair Cross) and reservoirs that once held water.

Stop II.2: Gombori Range represents the southern part of the young Greater Caucasus Mountains and stretches from NW to SE. The range separates the Alazani and Iori basins within the Eastern Georgian province of Kakheti and represents a western part of the Kura fold-thrust belt. The active phase of Caucasian orogeny started in the Pliocene, but according to alluvial sediments of Gombori range, we observe its uplift process to be a Quaternary event. The highest peak of the Gombori range has an absolute elevation of 1991 m, while its neighboring Alazani valley reaches only 400 m. The Turdo river flowing from Gombori Ridge to the north, before its confluence with the region's major river the Alazani, generates about 2 km long outcrop built by terrigenous sediments of Akchagyl (3.4-1.6 Ma) and Apsheron (1.6-0.7 Ma) stages. There are ongoing investigations showing that the outcrop carries information about different uplift regimes during the Quaternary. The site includes evidence of human activity as well, represented by medieval monastery caves.

Stop II.3. Alaverdi Monastery is a Georgian Eastern Orthodox monastery located 25 km from Akhmeta, in the Kakheti region of Eastern Georgia (Fig. 11).



Figure 11. Alaverdi Monastery. The Greater Caucasus in the background.

The monastery was founded by the Assyrian monk Joseph Alaverdeli, who came from Antioch and settled in Alaverdi, which was then a small village and former pagan religious center dedicated to the Moon. Situated in the heart of the world's oldest wine region, the monks also make their own wine, known as Alaverdi Monastery Cellar. While parts of the monastery date back to 6th century, the present day cathedral was built in the 11th century by Kvirike III of Kakheti, replacing an older church of St. George.

Stop II.4. Gremi architectural monument is the royal citadel and Church of the Archangels – in Kakheti, Georgia, built is a 16th century (Fig. 12).



Figure 12. Gremi Monastery complex.

It is what remains of the once flourishing town of Gremi and is located east of the present-day village of the same name in the Kvareli district, 175 km east of Tbilisi. Gremi was the capital of the Kingdom of Kakheti in the 16th and 17th centuries. Founded by Levan of Kakheti, it functioned as a lively Gremi was the capital of Kakheti Kingdom and a trading town on the Silk Road and royal residence until being razed to the ground by the armies of Shah Abbas I of Persia in 1615. The dome sits on an arcaded drum which is punctured by eight windows. The bell-tower also houses a museum where several archaeological artifacts and the 16th century cannon are displayed. Since 2007, the monuments of Gremi have been proposed for inclusion into the UNESCO World Heritage Sites.

Stop II.5. Tsinandali cellar is situated in the district of 120 km east of Tbilisi in a village Tsinandali. It is a historic winery, which once belonged to the 19th century aristocratic poet Alexander Chavchavadze (1786–1846). He dedicated his entire life to enriching Georgian culture and is considered the first romanticist poet in Georgia. He was also an excellent translator, acquainting Georgian readers with various European and Russian authors such as Aesop, Voltaire, Pushkin, etc. During his life, the Tsinandali palace (Fig. 13) was a cultural center frequently hosting Georgian and Russian poets and other public figures.



Figure 13. The Tsinandali palace.

The palace is a wonderful fusion of European and Georgian architecture throwing light on the life of the Georgian aristocracy of the epoch. Aleksandre Chavchavadze was the first to try European methods of winemaking in Georgia, making Georgian wine transportable to Europe. Visitors will enjoy a tour around the gorgeous palace gardens including the Tsinandali old wine cellar (Fig. 14).



Figure 14. Tsinandali old wine cellar.

Their owner was the first in Georgia to invite experts of decorative gardening from Europe to develop the estate park. Occupying around 18 hectares, the park stands out for its planning – a harmonious

synthesis of wilderness and decorative landscapes. The garden is a rich collection of occidental, oriental, and American plant species.

Field Trip III (7th October): hotel “Kachreti-Ambasador” – Shiraki plain – Vashlovani National Park – Hotel “Kachreti-Ambasador”

Stop III.1: Shiraki valley will be passed before visiting the Vashlovani National Park. The Shiraki plain represents the natural polygon of long term changes in the environment. Currently, this is an open dry steppic landscape, however, recent data collected using remote sensing and archaeological studies, deliver evidence of early human inhabitation of this area, starting from the Paleolithic and forming a constant chain of active settlement through time, until an abrupt cessation at the end of the Bronze-Early Iron ages. Geomorphologic, archaeobotanic, and soil studies also suggest that the region was covered by forests; hydro-modeling shows the possible existence of a well developed water network with a shallow lake in the center of the plain. We will visit the archaeological excavation site of Didnauri, which represents a well developed Bronze Age city, with neighboring burials (Fig. 15) indicating early state formation under favorable paleo-environmental conditions.



Figure 15. The Didnauri complex of ancient settlement is the subject of an ongoing expedition. Photo from the National Agency for Cultural Heritage Preservation of Georgia.

Stop III.2: Vashlovani National Park is located in the eastern part of Georgia, and was established in 1935 to preserve its unique shallow forests. The Reserve's area is expanded to 84.80 km² and Vashlovani National Park to 251.14 km². The area is characterized by its dry climate, situated at only 300-500 m above sea level. The Vashlovani State Reserve (Figs. 16-19) is notable for its unique, badland-like areas of desert and semi-desert steppe vegetation, and arid and deciduous forests.

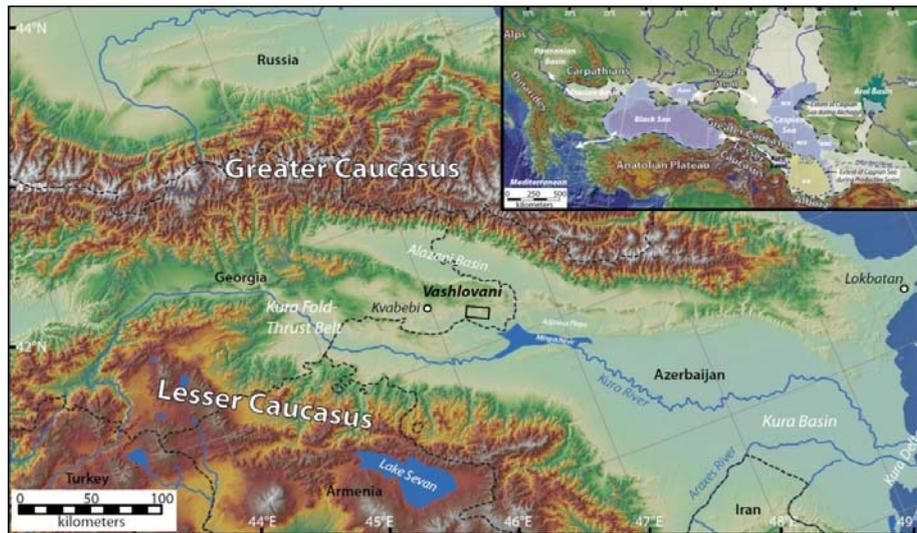


Figure 16. Map showing the distribution of Paratethyan Alazani and Kura Basins. Boxes outline Vashlovani National Park (adapted after Forte et al., 2015).



Figure 17. General view of Vashlovani National Park.



Figure 18. Mud volcanoes in the Vashlovani National Park.

It's also home to the great cliffs-of-the-canyons, known in the area as the "Sharp Walls," and the magnificent Alazani flood plains and forests.

The Akchagyl stage is represented here by continental and shallow marine molasses unconformably overlying the older rocks (maximal thickness c. 1500). Marine facies of the lower part of the section is made up of sandy-clayey rocks; its upper part – of sandstones and conglomerates (Gamkrelidze, 1964). Fossil fauna is represented here by endemic brackish molluscs of the Caspian type, and also by ostracoda and foraminifera. The Apsheronian stage is magnetostratigraphically dated at ~2.0 Ma, close to the base of the C2n (Olduvai) subchron. Given this age, there is no direct correlation to a eustatic highstand, but the time span comprises several glacial peaks including Marine Isotope Stages (MIS) 78 and 82 (Van Baak et al., 2013).

In south-east Georgia, Plio-Pleistocene synorogenic deposits in the Didi Shiraki syncline of north Kura foreland record the transition from foreland-basin to piggyback basin deposition on the hangingwall of the thrust. Unconformity-bounded sedimentary units within the basin thin both southward and northward onto structures generated by thrust faulting. Thrust systems are represents the Tertiary strata: post-Maikopian basin-fill and Akchagil-Apsheronian growth strata (alluvial-fluvial conglomerates, gravelites and poor cemented sandstones) (Alania and Enukidze, 2008).

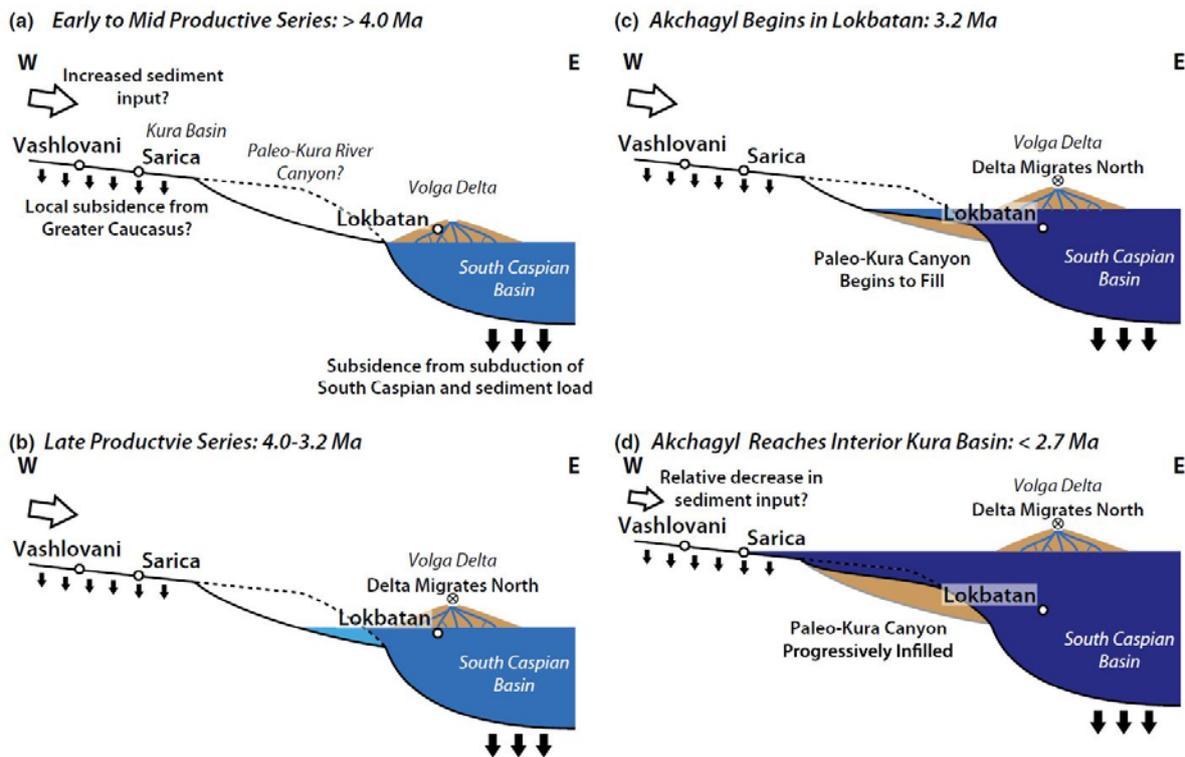


Figure 19. Schematic cross section through the Kura and South Caspian Basins during the transition from the Productive Series to Akchagyl (after Forte et al., 2015): (a) During the deposition of the Productive Series, base level was generally low and restricted to the deep part of the South Caspian basin. The Lokbatan section, from which the constraint for the regional time scale is derived, was deposited in the Volga Delta at a paleo-elevation likely significantly below the Sarica section. Deposition in the interior of the Kura Basin was likely facilitated by local subsidence related to the growth of the Greater Caucasus. (b) During the latter half of the Productive Series (Sabunchi and Surakhani Suites), base level within the Caspian began to slowly rise and Lokbatan was submerged (projection of the delta beneath water not shown). As Caspian base level rose, the Volga delta migrated north (as indicated by the circled x). (c) The Akchagyl transgression began in the South Caspian Basin at ca. 3.2 Ma and was marked by a rise in base level and a potential connection to the global ocean or Mediterranean, indicated by a change to darker blue water in the cartoon, which contributed to the distinctive microfauna which defines the stage biostratigraphically. The rise in base level also began the process of filling in the canyon carved into the Kura Basin during the Productive Series. (d) As the Akchagyl transgression continued, Caspian base level eventually increased sufficiently to reach the Sarica section and end deposition of the facies which define the Productive Series in this location sometime after ca. 2.7 Ma (based on the lower boundary of the maximum depositional age).

Field Trip IV (8th October): Hotel “Kachreti-Ambassador” – David Gareji half-desert – Tbilisi.

The David Gareja half-desert is located in the Kakheti region of Eastern Georgia, some 60–70 km southeast of Georgia's capital Tbilisi.

Stop IV.1: Mount Gareja is built up by lower Miocene sandy clays, dark-brown and brownish-gray clays with interbedded sandstones, and rare conglomerate interlayers. The upper Miocene is represented mostly by shallow and coastal sediments, but there are also deep-sea sediments represented by yellowish-gray calcareous sandstones and oolitic limestones (Fig. 21). There are also interlayers of sandy clays as well as motley continental clays with interbeds of thick coarse-grained sandstones, conglomerates, and a thin layer of volcanic ash (Fig. 20).



Figure 20. The upper Miocene yellowish-gray calcareous sandstones and oolitic limestones of Gareja.



Figure 21. The upper Miocene continental clays interbedded with thick coarse-grained sandstones and conglomerates of Gareja.

The entire section is well characterized by fauna. Some remains of vertebrates and plant residues in the form of fossilized pieces of trunk and branches. Pliocene sediments are represented by continental and marine facies consisting of coarse-grained yellowish-gray sandstones with numerous small pebbles, and thick basal conglomerates with volcanic ash interbeds. All geological sections are characterized by rich fauna.

Paleogeographical and geobotanical data show that anthropogenic modification of the forest, foreststeppe, and steppe natural landscapes of the Gareja-Iori's (Eastern Georgia) physical-geographical sub-region began in the Early Bronze Age. Due to an increase in economic activities, modification of regional natural landscapes took place under semi-arid climatic conditions. This intensified the desertification process in the Antiquity. Bronze and Iron Age archaeological monuments are found in the region, which was intensely populated at that time. Economic activities (metal processing, animal husbandry) caused a gradual transformation of the landscape of light arid forests into a semi-desert landscape..

Stop IV.2: The David Gareja monastery complex was founded in the 6th century by David (St. David Garejeli), one of the thirteen Assyrian monks who arrived in the country at the same time. The complex (Fig. 22) includes hundreds of cells, churches, chapels, refectories, and living quarters hollowed out of the rock face.



Figure 22. The David Gareja Monastery complex with Gareja semi-desert in the background.

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SOCIAL PROGRAM

During the conference, a series of tours and entertainment will be organized. More details will be announced in the Second Circular.

VENUE

Tbilisi is the capital and the largest city of Georgia, lying on the banks of the Kura River. The city was founded in the 5th century by Vakhtang Gorgasali, the monarch of Georgia's precursor Kingdom of Iberia, Tbilisi has served, over various intervals, as Georgia's capital for nearly 1500 years and represents a significant industrial, social, and cultural center of the country. Located on the southeastern edge of Europe, Tbilisi's proximity to lucrative east-west trade routes often made the city a point of contention between various rival empires throughout history, and the city's location to this day ensures its position as an important transit route for global energy and trade projects. Tbilisi's varied history is reflected in its architecture, which is a mix of medieval, classical, and Soviet structures. Historically, Tbilisi has been home to peoples of diverse cultural, ethnic, and religious backgrounds, though it is now overwhelmingly Eastern Orthodox Christian. Notable tourist destinations include cathedrals like Sameba and Sioni, classical Freedom Square and Rustaveli Avenue, medieval Narikala Fortress, the pseudo-Moorish Opera Theater, and the Georgian National Museum.

The Georgian National Academy of Sciences (GNAS), established in 1941, is an autonomous body financed by the Georgian government (Figs. 23, 24). GNAS is the highest scientific institution conducting and coordinating fundamental research in the natural sciences and the humanities in Georgia. It oversees 9 scientific departments of the Academy (www.science.org.ge). GNAS has 61 members and 40 corresponding members. The Georgian National Academy of Sciences coordinates

scientific researchers in Georgia and develops relationships with up to 20 Academies of foreign countries and other scientific countries. It is a scientific Adviser to the Georgian Government. GNAS oversees the richest depository of manuscripts and rare book collections in the country.

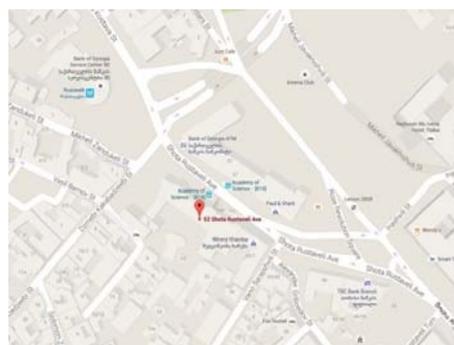


Figure 23. The main building of the Georgian National Academy of Sciences.

Figure 4. Location of the Georgian National Academy of Sciences.

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ACCOMMODATIONS

There are numerous hotels in Tbilisi and Kakheti. Participants should arrange their accommodations in Tbilisi by themselves. Accommodation in Kakheti will be arranged by the organizers and price for hotels will be provided in the Second Circular. Some examples of hotels in Tbilisi see in Table 1.

Table 1. List of hotels located in vicinity of the conference venue.

Hotel	Price per day (USD)		Distance from GNAS
	Single room	Double room	
Vere Palace (http://www.verepalace.com.ge/)	110	135	5 km
Hotel Orion Tbilisi (http://www.hotelorion.ge/tbilisi/)	100-110	100-110	3 km
Holiday Inn (www.hi-tbilisi.com)	255	270	4 km
Hotel “Primavera” (www.primavera.ge)	100-110	100- 120	5 km
Hotel “Armazi Palace” (http://www.info-tbilisi.com/armazipalace/)	55-60	80	8 km
Hotel Diplomat (http://www.diplomat.ltd.ge)	50-80	80-100	7 km
Argo Palace (http://info-tbilisi.com/argopalace/)	60	80	3 km
Hotel Kolkhi	50	60	3 km

Please note that there are no student dormitories in Georgia, also normal hotels are not cheaper then 60 USD. The GNAS is located in central part of Tbilisi, thus the prices of hotels are higher. The small hotels are not located near GNAC, but the taxi cost is cheap: about 3 USD.

REGISTRATION FEE

Registration Fee (Please refer to the “Registration Form”)

	Registration before 31 August 2016	Registration after 31 August 2016
	Euro	Euro
Participant	300	350
Accompanying person	250	300
Student*	200	250

*Student identification is required.

The registration fee covers conference kit, refreshments during coffee breaks, lunches during field trips, museum entrance fees, and bus transportation during the field trip. It does not cover the conference dinner as well as hotel accommodations in Tbilisi and hotel “Kachreti – Ambassadori” during the field trips.

REFUND POLICY

Fifty percent refund before 31 July 2016. No refund is possible after 31 July 2016.

FINANCIAL SUPPORT

IGCP 610 has very limited funds available to distribute and is not able to support the full cost of meeting attendance. Therefore, applicants should show evidence of seeking or having obtained funds from elsewhere before applying for assistance. Preference in funding allocations will be given to students and young researchers from the developing world who plan to present a high quality paper accepted by the Scientific Committee. An application for support may be e-mailed to the Organizing Committee requesting in your own words a funding amount with justification.

CONFERENCE LANGUAGE

The official conference language is English.

ABSTRACT

Preference will be given to extended and informative abstracts containing new data and arguments. As a rule, your abstract(s) should be around 2 pages. But we will be quite flexible with the length of the abstract (up to 6 pages) if it offers new ideas and information.

Short and uninformative abstracts or abstracts irrelevant to the themes of the meeting will not be considered.

The guidelines for abstract preparation and submission are outlined in the Abstract Template. You must specify the mode of your presentation: ORAL or POSTER. No abstracts will be accepted without registration of at least one of the authors. Every registered participant has the right to submit up to two extended abstracts as the first author.

Please type your abstract using the template (attached to the First Circular). Submit your abstract via e-mail to Prof. Valentina Yanko-Hombach valyan@onu.edu.ua; valyan@avalon-institute.org

ORAL AND POSTER PRESENTATION

Each speaker will have 20 minutes for a presentation, including questions. Poster format is 100x180 cm. Projection Equipment: Screens, LCD (PowerPoint presentation) projectors, and overhead projectors are available.

PUBLICATION

Accepted abstracts will be published in the IGCP 610 Proceedings. The full papers will be published (after proper review) in an IGCP 610 Special Volume of the journal *Quaternary International*. For preparation of the manuscript, refer to the journal’s Instructions for Contributors.

VISA

Visitors from other countries must carry a valid passport and, in certain cases visas, to be able to enter Georgia. For more information on visas and other required travel documents, please contact the Georgian Embassy or Consulate in your area before your departure. Each attendee is responsible for obtaining his/her visa in Tbilisi airport.

CLIMATE

In Georgia, the middle of October is a good time for field trips. Daily temperature is about 20-25° C, and at night, it is about 15-20° C.

TRAVEL

Georgia is easily accessible by direct, regular or charter flights from all main airports of Europe and Asia. The International Airport is located a few kilometers east of the capital of Georgia (Tbilisi). Regular buses and taxi connect the airport with the city.

DEADLINES

25 May 2016	First Circular on IGCP 610 website: (http://www.avalon-institute.org/IGCP610/)
25 May 2016	Abstract submission and registration opens
15 August 2016	Abstract submission closes
31 August 2016	Notification of abstract acceptance
31 August 2016	Deadline for early registration
22 May 2016	Submission of application for financial support opens
31 July 2016	Submission of application for financial support closes
15 September 2016	Second Circular and the Conference Programme on IGCP 610 website: (http://www.avalon-institute.org/IGCP610/)
31 December 2016	Submission of full paper to IGCP 610 Special Volume of <i>Quaternary International</i> closes.