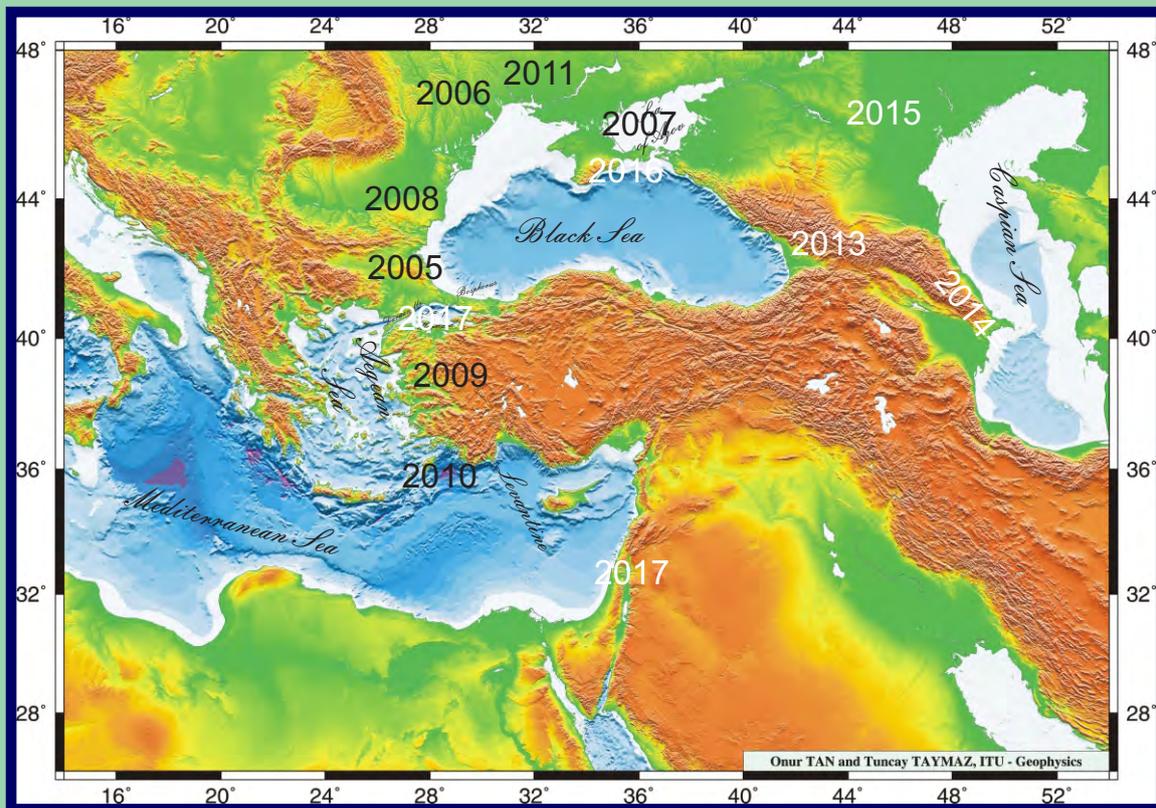




Institute of Geology and Geophysics of the Azerbaijan National Academy of Sciences, Baku, Azerbaijan

12-20 October 2014

INTERNATIONAL GEOSCIENCE PROGRAMME



Field Trip Guide of the Second Plenary Conference

IGCP 610 "From the Caspian to Mediterranean: Environmental Change and Human Response during the Quaternary" (2013 - 2017)

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



IGCP 610 Second Plenary Conference and Field Trip, Baku, Azerbaijan

12-20 October 2014

FIELD TRIP GUIDE

Organizers:

Geology and Geophysics Institute of the Azerbaijan National Academy of Sciences, Baku, Azerbaijan

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Geology and Geophysics Institute of the
Azerbaijan

National Academy of

Sciences

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Introduction

These Field Trips are carried out within the frame of the IGCP 610 Second Plenary Meeting and follow the Meeting sessions held in Baku, October, 12-14, 2014.

The IGCP 610 Programme is a logical continuation of the previous IGCP 521-INQUA 501 Programme, which was active for five years and covered the coastal areas around the Black Sea and eastern Mediterranean (Fig. 1).

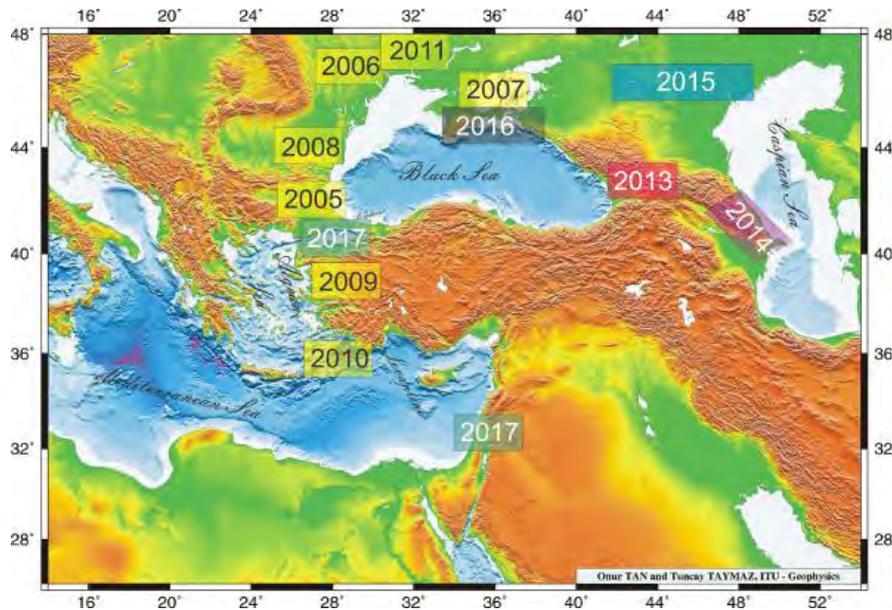


Figure 1. The Caspian-Black Sea-Mediterranean –CORRIDOR”: in yellow are the locations of IGCP 521-INQUA 501 meetings and field trip sites (2005-2011); in other colors are sites to be studied by the present IGCP 601 Project: 2013 – Tbilisi, Georgia; 2014 – Baku, Azerbaijan; 2015 – Volgograd-Astrakhan’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

The previous Plenary Meeting and Field Trips within the frame of the IGCP 610 project were conducted in Georgia in 2013. The present field trips will focus on observations of geological characteristics of Quaternary stratotypes as well as key archaeological and paleontological sites in Azerbaijan. All are easily accessible for study and will be sampled during the Field Trips for further investigation in various laboratories around the world.

The Second Field Trip will focus on the entire spectrum of Quaternary geological sequences exposed in the terraces and ridges of the Caspian region. This includes the stratotype of the Mountain of Bakinian Horizon (ca. 600–450 ka BP) located in the suburbs of Baku on the Absheron peninsula; major exposures in the southwestern part of the peninsula of Garagush mountain, Bakinskie Ushi (Fig. 2). This includes outcrops of the Quaternary deposits at Garamaryam and Turianchay in the Ajinour region, and Bozdag located in the Middle Kura region, which is a reference section of the marine sediments of the Bakinian Horizon in western Azerbaijan. The Neogene-Quaternary boundary as well as the Matuyama-Brunhes Reversal with Olduvai and Jaramillo subchron episodes will be traced.

Quaternary geology of the region

The Apsheronian Stage

The Apsheronian Stage occurs widely within the Absheron peninsula, Gobustan, and Kura depression. Within the limits of the Absheron peninsula, these sediments (Fig.3) are

stratigraphic analogues to the Gurian Stage (Black Sea region) and the Calabrian stage (Mediterranean region), and they have an extremely widespread occurrence.



Figure 2. Map of Azerbaijan with geological and archaeological sites to be visited during the Field Trips on October 15 (# 1), 16 (# 2), 17 (# 3), 18 (# 4), 19 (#5), and 20 (#6), 2014.

Mollusk fauna recovered from Apsheronian sediments were first studied by Shegren (1891). These rocks were subsequently studied by Andrusov (1897, 1923), Golubyatnikov (1914), Bogachev (1932), Alizadeh (1935, 1985), Alizadeh (1973), and others.

It should be noted that a significant part of the peninsula where Apsheronian sediments occur has undergone intensive development in recent years. Major exposures have been preserved only in the southwestern and central parts of the peninsula: Garagush mountain, Kergez, Bakinskies Ushi, the village of Gezdek in the Shikhovo region, in the Yasamal' valley, and near the Sabunchi railway station.

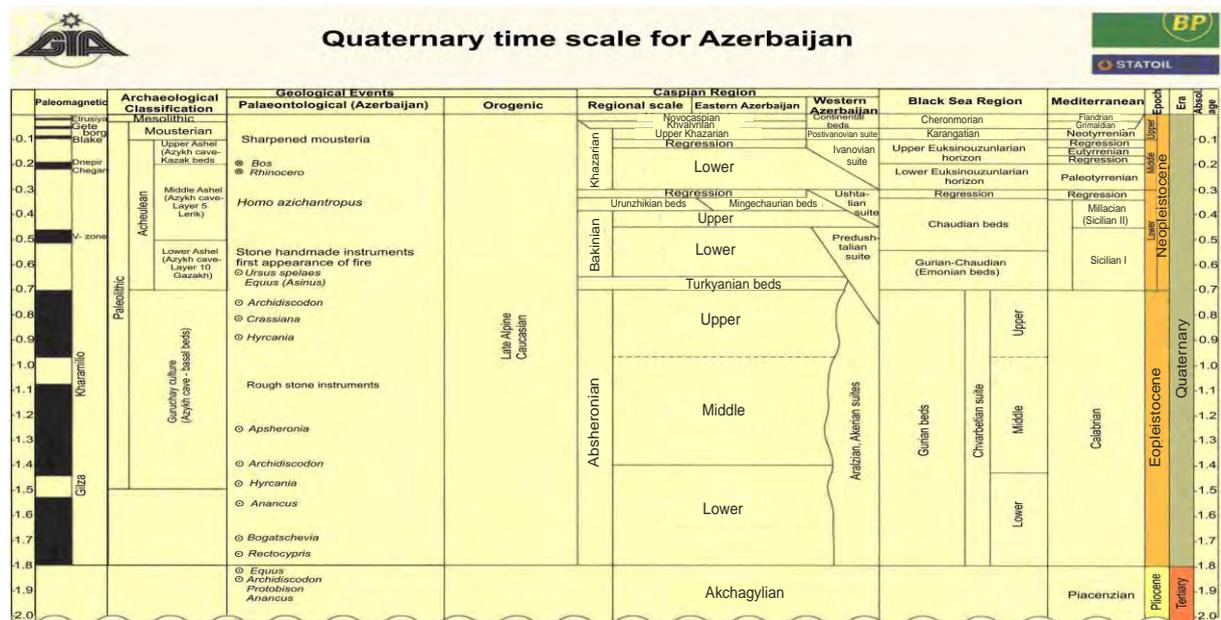


Figure 3. Quaternary stratigraphy of Azerbaijan.

Based on the micro- and macrofaunal complexes and lithological composition, the Apsheronian Stage has been divided into 3 substages.

The Lower Apsheronian deposits overlie the Akchagylian rocks without any notable nonconformity in the Absheron peninsula. These sediments (Garagush, Bakinskie Ushi, Yasamal' valley) mainly consist of grey, dark-grey, greyish-brown, and brown sandy shales with thin intercalations of volcanic ash and gypsum and also sand, 17 to 35-40 m thick (Fig. 4). At the base of the substage, a bed of black non-carbonaceous shales can be identified. The lower substage contains the following mollusk fauna: *Monodacna sjoegreni*, *Apsheronia raricostata*, *Limnaea lossonae*, *L. ribina*, etc. The following ostracods are found: *Trachyleberis azerbaijanica*, *T. pseudoconvexa*, *Leptocythere multituberculata*, *Lymnocythere acristata*, etc. The thicknesses range from 30 m to 500 m (in the SE part).

The Middle Apsheronian substage (Garagush, Bakinskie Ushi, Yasamal' valley) is represented by grey, dark-grey, and brown sandy shales with thin interbeds of sandstone and sand. The friable, fine and medium grained sand and sandstones which are grey and yellow-grey with gravel, are found in many places. A bed of limestone-coquina, 30 to 40 m thick (Kergez, Garagush) can be seen in the upper part of the section. The occurrence of coarse-grained and rudaceous material in the lithofacies composition testifies to the coastal shallow-water environments there in the Middle Apsheronian Age. The facies shift from deep water setting to shallow water environment resulted in the bloom of ostracod fauna and the origination of numerous new species.

The total thickness varies from 40 to 500 m. The Middle Apsheronian complex contains a rich mollusk fauna: *Monodacna nitida*, *Parapschersonia raricostata*, *Absheronia propinqua*, *Hyrkania hyrcana*, etc. The ostracod complex found in Middle Apsheronian sediments contains a large number of varieties: *Caspiolla liventalina*, *Caspiocypris filona*, *Loxoconcha garschkovi*, *Leptocythere casusa*, *L. martha*, etc. These sediments were accumulated in the foreshore and shoreface zones of the basin.

The Upper Apsheronian substage is exposed in the area of Shikhova, by the foot of the "Bakinian Stage" mountain: in the area between the village of Shikhovo and Patamdar. Lithologically, the sediments of this substage are represented by thick limestone-coquina, sand, sandstones with gravel, and sandy clays 120 to 150 m thick. Fauna are represented by the following assemblage of mollusks: *Hyrkania hyrcana*, *H. intermedia*, *Apsheronia propinqua*, *Pseudocatillus*, *Ps. bacuanus*, etc.

On the whole, the sediments of the Apsheronian stage are characterized by spatial lithofacies diversity within the Absheron peninsula. This diversity is manifest by the gradual replacement of the thick limestones with the clayey-sandy formations in the SW direction.

In West Azerbaijan, the sections of Apsheronian deposits are classical not only for Azerbaijan but also for the whole Crimean-Caucasian Region.

Outcrops of the marine facies of this regional stage occur on the Bozdag, Duzdag, and Garaja ridges in the southern part of the Adjinohur Region, as well as in the Godjashen-Ghey chay folded zone around Mingechavir Water Reservoir and along the Turianchay River (Shirinov and Bazhenov, 1962) (Fig.4, 5). Within Ajinour, the Duzdag section is accepted as a key one, as it reveals a continuous exposure of the marine and coastal-continental formations (600 m).

Apart from the marine and marginal-marine facies, the Apsheronian deposits are also expressed by the continental facies that is well-developed within the limits of the Lower Aras Depression (the so-called Araxes Suite) and the Miskhan-Gafan Zone (the Akeran Suite).

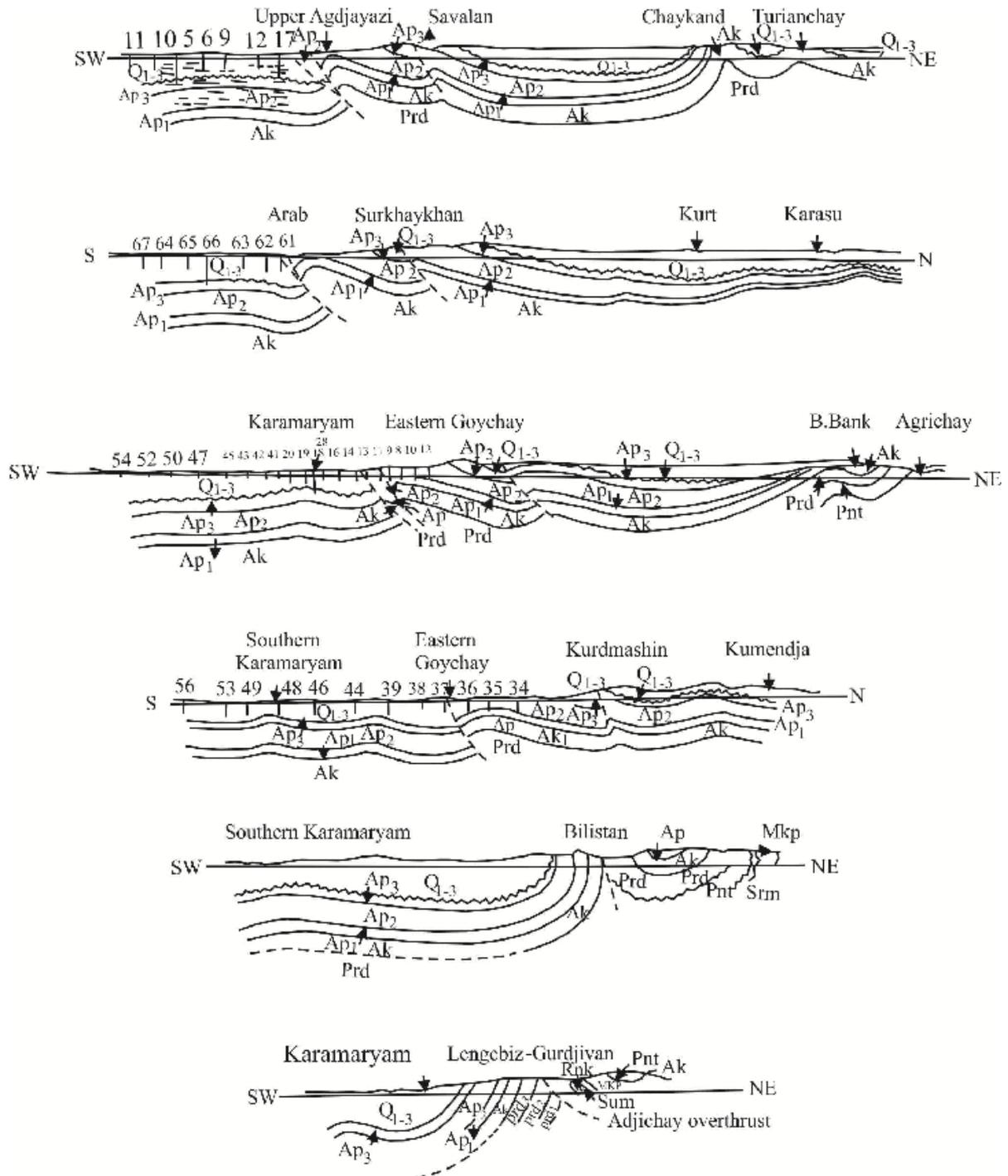


Figure 4. Cross-section across Ajinour: Qdel = deluvium deposits; Q₁₋₃ = old Caspian deposits; Ap₁ = Upper Apsheronian; Ap₂ = Middle Apsheronian; Ap₃ = Lower Apsheronian; Ak = Akchagylian; Prd = Productive Series; Prd₃ = Kalamadin Suite; Prd₂ = Lengebiz Suite; Prd₁ = Karanour Suite; Pnt = Pontian; Srm = Sarmat stage; Krg = Karagan stage; Knk = Konk stage; Tsch = Chokrak stage; Mkp = Maykop Suite; Kn = Kounian Suite; Sum = Sumgayit Suite (from Shirinov and Bazhenov, 1962).

Here, there are the shallow-water gastropods *Bythinia aff. fenticulata*, *Pisidium amicum Mull*; and the onshore forms – *Planorbella* and *Helicella*. The thicknesses of the first and the second suites equal 250 m and 200 m, respectively.

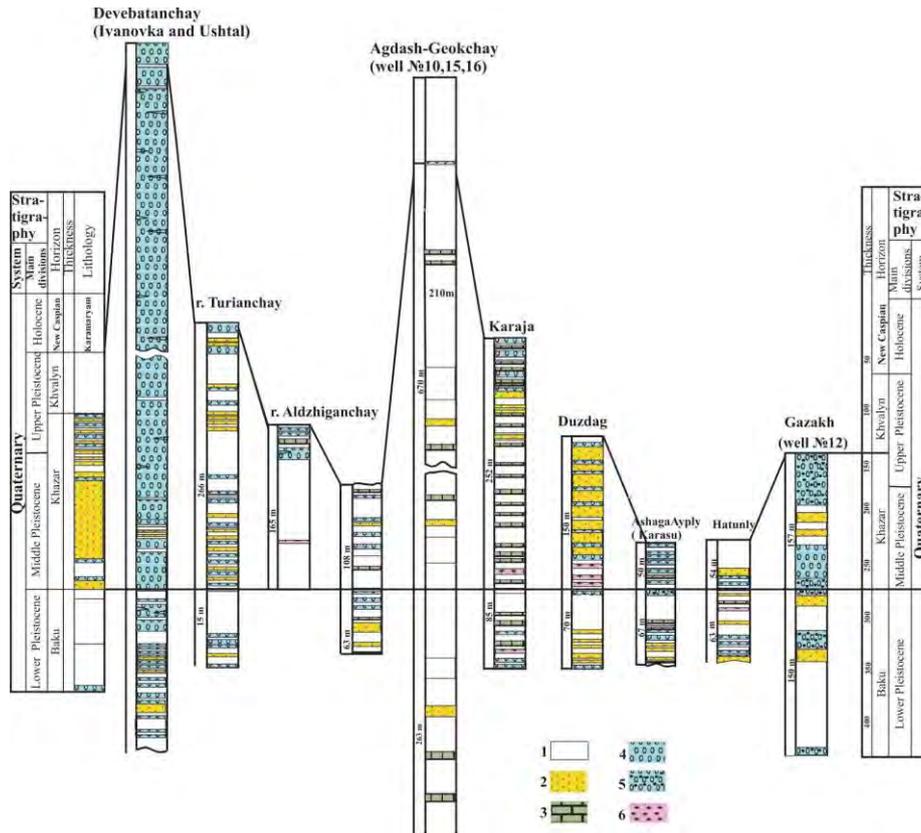


Figure 5. Correlation diagram of the Quaternary sediments along the northeastern foothills of the Lesser Caucasus and Ajinohur region. 1 = mudstone, 2 = sand, 3 = sandstone, 4 = pebbles, 5 = conglomerates, 6 = volcanic ash (from Mamedov and Aleskerov, 1988).

The lower substage outcrops in the dome of the West Godjashen Zone on the northern coast of the Minghechavir Water Reservoir and the Gheychay Anticline in the sections of the Turianchay River. Those are the marine pearly grey and grey sandy shales with sand and sandstone interlayers (300-400 m). In the West, the bench gravel and conglomerate interlayers appear in the upper portion of the section (Fig. 6).

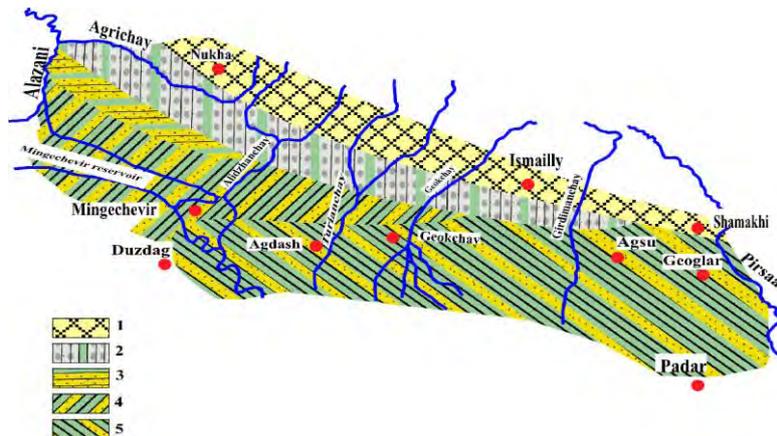


Figure 6. Schematic map of the lithofacies of Lower Apsheronian sediments: 1 = area of erosion, 2 = gravels, conglomerates with rare interbeds of mudstones and sandstones, 3 = sandstones with thin mudstone intervals, 4 = shales, sands, and sandstones, 5 = shales with rare interbeds of sands and sandstones (from Shirinov and Bazhenov, 1962).

The middle substage is predominantly represented by the marine and partly also continental lithofacies. The marine deposits (sandy shales, sands, and shell limestones)

are intermittent with the continental (loam soils, sandstones, and conglomerates) in the sections of the rivers Gheychay, Turianchay, and Aldjiganchay (Fig. 7). The cumulative thickness is equal to 400-710 m. In the West Godjashen section (540 m), the outcrops are mainly rudaceous sediments; shales as well as thick sand, sandstone, and conglomerate interlayers.

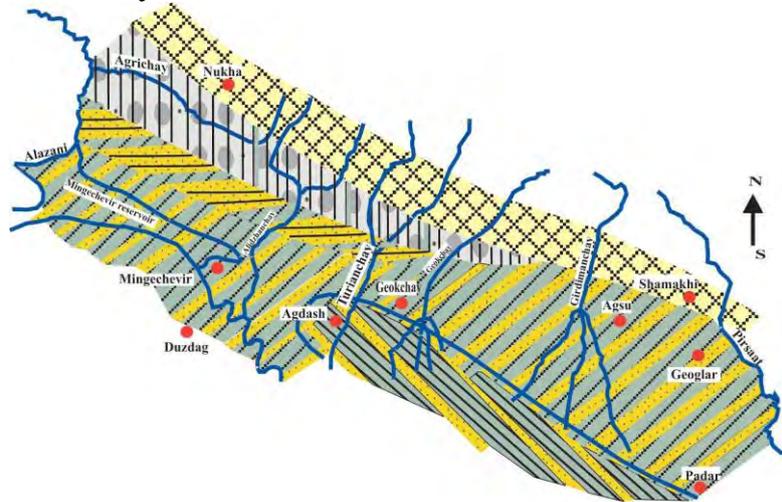


Figure 7. Schematic map of the lithofacies of Middle Apsheronian sediments [see legend in Fig. 6] (from Shirinov and Bazhenov, 1962).

The upper substage of the Gheychay and Turianchay intersections consists of alternate sandy shales, sands, sandstones, shell deposits, loam soils, and gravel conglomerates. In the West Godjashen are well-developed, mainly greyish-brown sandy shales and muddy sands with interlayers of volcanic ash and conglomerates. The thickness of the deposits ranges from 240 m to 1,000 m at different localities (Fig. 8).

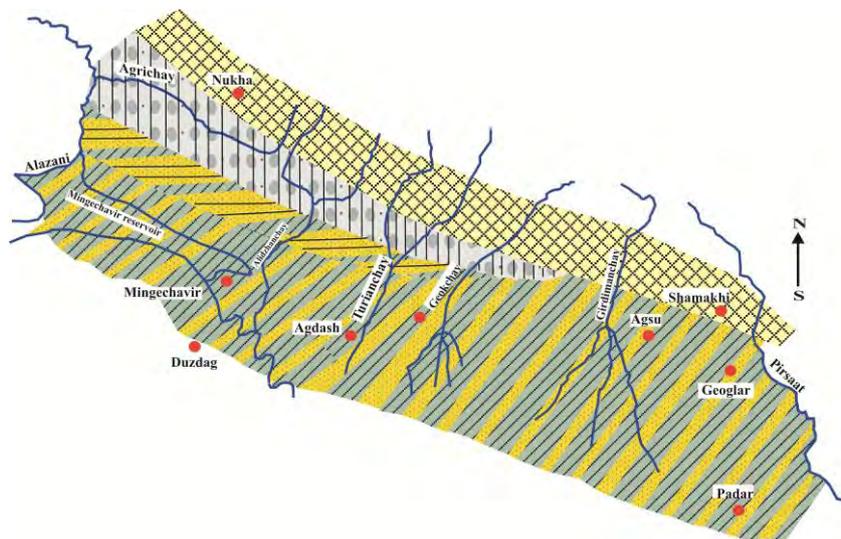


Figure 8. Schematic map of the lithofacies of Upper Apsheronian sediments [see legend in Fig. 6] (from Shirinov and Bazhenov, 1962).

The section is predominantly represented by the continental lithofacies (brown shales with frequent interlayers of sandstones, bench gravel, and conglomerates, with lenses of brown loam soil and volcanic ash) in the northern part of the Adjinohur. The total thickness exceeds 1,000 m.

The Bakinian Horizon

The Bakinian sediments, first paleontologically identified by Shegren (1891), were described in detail in the Mountain of “Bakinian Stage” by Golubyatnikov (1914). Stratigraphic analogues are the Emonian and Chaudian beds in the Black Sea region, and the Sicilian I and Sicilian II in the Mediterranean region (Fig. 3).

Natural outcrops of the Bakinian Horizon occur toward the southwest (the Mountain of “Bakinian Stage”), the eastern side of the Yasamal’ valley, and central (in the region of Lake Beyuk-Shor) parts of the Absheron peninsula. In the eastern part of the peninsula, Bakinian sediments are represented in well data by alternating brown and grey shales with shells (Fig. 9).

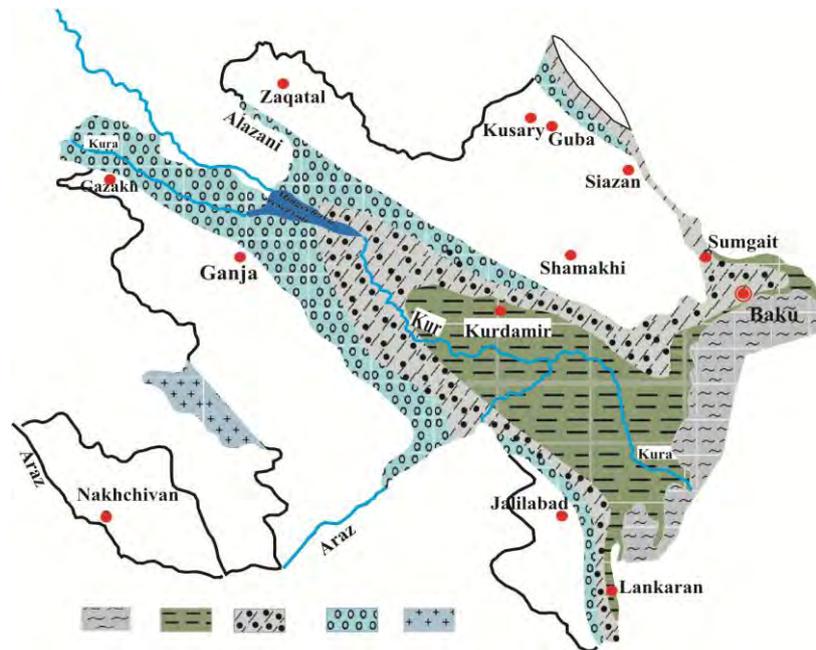


Figure 9. Schematic lithofacies map of the Bakinian Horizon sediments: 1 = mudstones; 2 = muddy-sandy sediments; 3 = sandy mudstones interbedded with conglomerates and limestones; 4 = continental coarse sediments; 5 = volcanic rocks (from Alizadeh, 1987).

They are 120 to 130 m thick. In the Absheron peninsula, Bakinian sediments occur in two facies—shoreface and offshore. They consist of loose conglomerates, limestone-coquina, sand, sandstones, and clays. With respect to *Didacna* fauna, they are divided into two parts—the lower and the upper.

The predominant faunal forms constituting the basis of the Lower Bakinian faunal complex are the mollusks: *Didacna parvula*, *D. catillus*, and their transitional forms. The Upper Bakinian faunal assemblage consists predominantly of *Didacna rudis* and *D. carditoides*, etc. At the same time, Bakinian sediments are abundantly characterized by other bivalve mollusks such as *Monodacna*, *Adacna*, gastropods, ostracod fauna, and different types of spores and pollens.

The Lower Bakinian complex is dominated by typical ostracoda, such as *Caspiocypris filona*, *Loxoconcha garschkovi*, *L. endocarpa*, *Leptocythere medicata*, *Callistocythere bacuana* mixed with numerous shells reworked from the Apsheronian sediments. The Upper Bakinian complex is poor in term of species diversity but rich in a number of individuals represented by *Caspiolla gracilis*, *Bacunella dorsoarcuata*, *Leptocythere referate*, and *Leptocythere periculosa*.

In the eastern part of the Absheron peninsula, the Bakinian sediments are deposited between the Turkyan and the Mingechaurian (Urunjikian) horizons (Fig. 3). In the central and western parts of the peninsula, they are also underlined by Tyurkian strata but overlain by younger sediments, such as Lower Khazarian (Gyurgyanian), Upper Khazarian (Garachukhurian), and Khvalynian.

The outcrop of the Bakinian sediments is most complete in the axial parts of the synclinal folds of the eastern Absheron peninsula. There is a gradual, conformable transition between the Apsheronian and Bakinian sediments, divided by the Tyurkian beds. The latter are pinched out in the crestal parts of the anticlines, and the Bakinian sediments are accumulated directly on the eroded surface of the Apsheronian (sometimes on the Middle Apsheronian beds) with an angular unconformity of 5-10°.

In West Azerbaijan, the Bakinian Horizon deposits are developed in the Bozdag, Duzdag, Garaja, Godjashen, and Ghedakboz ridges. They have a more rudaceous character in comparison with the Absheron peninsula. The tendency for the growing role of the fine grained material from the West to the East here is also observed. On the whole, the deposits comprise grey and brown shales as well as coarse-grained sandstones with inclusions of pebbles and interlayers of sandstones, conglomerates, and volcanic ash. The thickness reaches 120-140 m.

The continental deposits of the Preushtal and Ushtal suites are the analogues of the Baku Age marine facies within the boundaries of Ajinohur.

The absolute dating of the Baku deposits, obtained using various radiometric and paleomagnetic methods, are as follows: the upper boundary of the Lower Baku deposits = 480 ± 53 ka to 400 ± 50 ka (the TL method) (Leontyev et al., 1975; Rychagov, 1977); the lower boundary of the Lower Baku deposits = 730-750 ka according to the paleomagnetic data, which corresponds to the Brunhes Chron (Isayeva, 1990; Sadigova, 1995).

The Late Baku Transgression ended at 378 ± 40 ka BP (Mamedov, Aleskerov, 1988) according to the thermoluminescent dating method.

In Ajinohur, Baku Horizon sediments are underlain by sediments of the Tyurkan Horizon, which are represented by the continental facies-series of alluvial sands and shales that occur between the faunistically characterized Apsheronian and Lower Bakinian deposits in the Duzdag area (30-40 m).

The Baku Horizon itself outcrops in the marine facies in the western part of the North Duzdag Anticline and is represented by the alternation of brown-grey shales with fine- and medium-grained sands (Fig. 9). The interlayer of white volcanic ash (0.3-0.4 m) occurs in the top of the section. The shales consist of the ostracods that are characteristic of the horizon. The thickness equals 120 m.

To the NE of Duzdag, in the Garaja-Garamaryam Anticlinal Zone, the horizon has a distinctly clayey composition. For instance, there is a series of grey and brown shales at the base of the horizon in Garaja, with one interlayer of grey volcanic ash (0.3-0.4 m) at its base. Above that, there is an alternating sequence of clays and sands. An interlayer of white volcanic ash with a thickness of 0.4-0.5 m occurs closer to the roof of the horizon. *Didacna parvula* (Nal.), *D. catillus* (Eichw.), and the forms that are intermediate among them are encountered in the shales. In the Godjashen Ridge, the section is represented by alternating shales and sandstones in its lower part that are replaced by intercalating sandy shales and bench gravels in its upper portion. There is a bed of pink volcanic ash at the top. The overall thickness of the horizons varies between 120 m and 330 m.

The Upper Bakinian Transgression that exceeded in scale the Lower Baku one (the sea levels rose to +15 and +10 m, respectively) was replaced by the deep Venedian (Ushtal) Regression that witnessed a sea-level drop to -55 m (Popov, 1983).

The Minghechavir (Urunjik) Horizon

These sediments were first described by Bogachev (1935) in Minghechavir Province. Later on, Fedorov (1957) described the analogous layers with *Didacna eulachia* Bog as found in Turkmenistan – they were called the Urunjik ones. Fedorov also gave those deposits an independent status based on the transitory nature of the guide fauna. Some researchers consider the Minghechavir layers as a portion of the Upper Bakinian substage (Mamedov, Aleskerov, 1985; Lebedeva, 1978).

Faunistically, the layers are characterized as distinct also by the cardiidae: *D. pravoslavlevi* Fed., *D. karelini* Fed., *D. mingetschaurica* Vekil.; and the ostracods: *Loxoconcha liventali* Scheid., *L. Endocarpa* Schar., *L. kailcky* Liv., *Leptocythere periculosa* Step., *L. posteriobiplicata* Step., *L. pondoplicata* Step., *Paraleptocythere caspia* (Liv.), *Trachyleberis pseudoconvexa* (Liv.), etc. Minghechavir Horizon of Ajinohur occur in the marine facies within the same boundaries as the above-mentioned Baku deposits, which gradually transition to Mingechavir sediments. The natural outcrops of those deposits are known on the slopes of the Duzdag, Garaja, and Garamaryam ridges. On Duzdag, the deposits of this horizon are manifest in the coastal-shallow-water facies and are represented by an alternation of dark grey, grey, brown, and reddish-brown (often sandy) clays with light-grey and pearl grey fine and medium grained sands as well as infrequent interlayers of shell deposits and pinkish ash rocks. The overall thickness of the horizon is 655-600 m. There is a similar section to the NE, on the northern slope of the Garaja Ridge. The whole section of the described deposits is represented by the homogenous series of grey and dark-grey clays with a fauna represented by *Didacna eulachia* (Bog.) and *D. mingetschaurica* (Vecil. J.) farther to the east in the region of the Garamaryam. One interlayer (8-10 m) of pink ash rock is found in the middle part of the section. The thickness of the deposits equals 60-70 m in that section.

The cumulative thickness of the marine deposits of the Bakinian and Mingechavir horizons varies from 180 m to 400 m.

The marine deposits of the Bakinian Horizon are gradually replaced by the continental facies of alluvial-proluvial origins towards the margins of the Greater Caucasus. In the Kudbarekdag (Fig. 10), the lower part of the horizon (220 m) is represented by sandy shales in which large *Helix* species are encountered; they also have stand-alone bench gravel lenses. In the upper portion of the section (to 600 m), there is an abundance of bench gravel and conglomerate series and lenses. Thus, there is a gradual change of lithofacies from marine in the Garaja-Bozdag area to transitional in the Godjashen area, and finally to continental in the Kudbarekdag area.

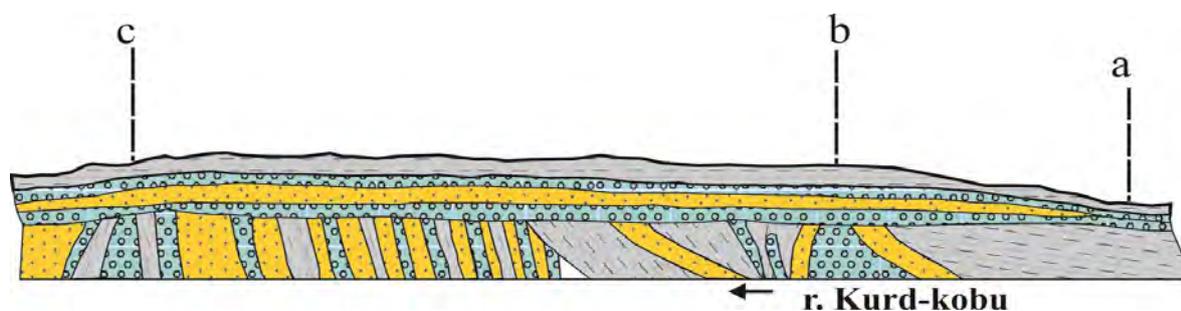


Figure 10. Folded Bakinian sediments of the Karamaryam ridge along the Kurd-kobu River: a - North, b - South, c - Central Karamaryam folds (from Shirinov and Bazhenov, 1962).

The Lower Khazarian Horizon

The maximum of the Lower Khazarian Transgression—the so-called Singhil or Gurgan substage—dates back to 254-340 ka according to the TL method and to 300 ka by uranium method (Mamedov, 1988), which corresponds to the Dnieper-Chegan Chron on the paleomagnetic scale. The upper boundary of the deposits of the Lower Khazarian Transgressive Stage of the Paleo-Caspian is dated to 145 ka (Rychagov, 1977). They form the abrasive-accumulative terraces at elevations of 180-190, 125-130, and 80-90 m.

In West Azerbaijan, the Lower Khazarian deposits have been revealed in sections of the Duzdag and Garaja ridges. They are composed of the greenish-grey and yellowish, strongly sandy shales as well as sands, sandstones, bench gravels, gravelstone, and conglomerates (Fig. 11).

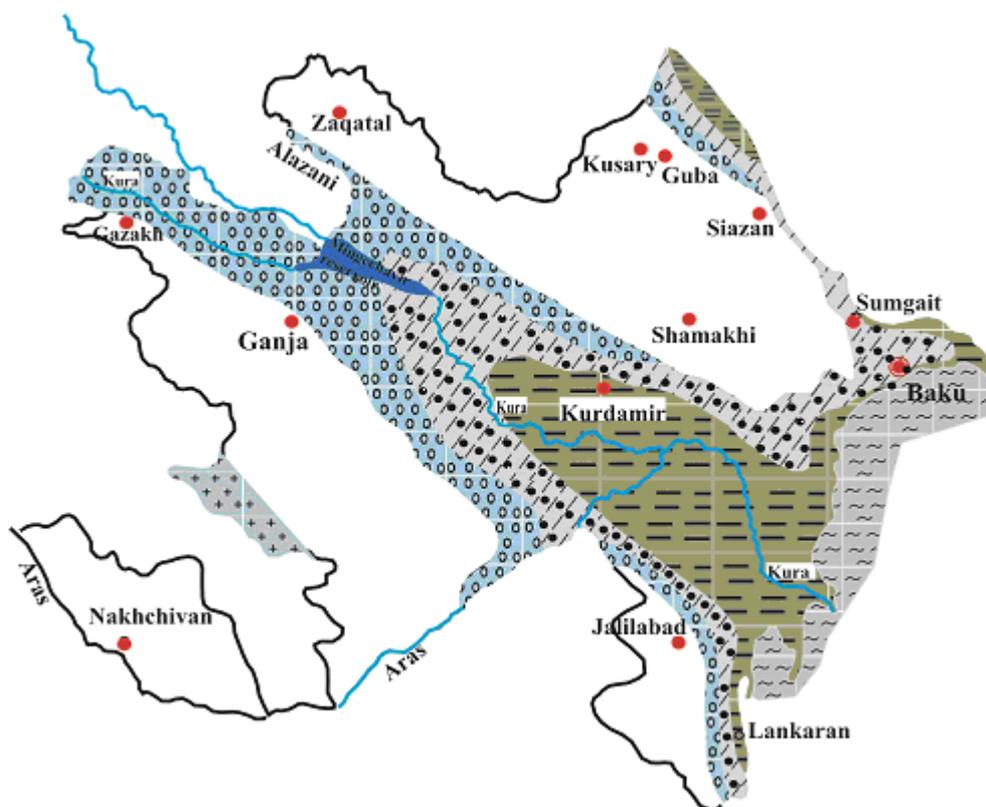


Figure 11. Schematic lithofacies map of the Khazarian sediments [see legend in Fig. 9] (from Alizadeh, 1987).

The Ivanovo Suite is the continental analogue of the marine Lower Khazarian deposits well-developed in djinoher.

The Upper Khazarian Transgression that replaced it was not so expansive, and sea level remained at the minus mark throughout.

The Upper Khazarian deposits are dated well enough, while there are no substantial discrepancies among the data produced by the use of the different methods. Namely, the uranium method defines their age as equalling 122-87 ka, while the TL method sets their age at 127(130) -89 ka and they are dated at 105-85 ka (Shkatova, 2008) according to the electromagnetic resonance method. They correspond to the Blake paleomagnetic inversion on the paleomagnetic scale. These dates are in keeping with those obtained previously by Leontyev et al. (1975), who used the thermoluminescent method and arrived at 143 ± 9 - 91 ± 17 ka.

The Upper Khazarian Horizon

The Upper Khazarian (Garachukhur) Horizon is represented by the mollusk fauna (*Didacna surachanica* Andrus., *D. delenda* Bog., *D. nalivkini* Wass., etc.) in Azerbaijan. The ostracod faunas come in from the Lower Khazarian basin.

The lithofacies composition of the marine Upper Khazarian deposits is akin to that of the Lower Khazarian sediments.

The continental formations of the Upper Khazarian substage—the Post Ivanovo Suite—are developed in the central and northern parts of Ajinohur. They are represented by alternating loam soils, conglomerates, and bench gravels in the lower part of the horizon and predominantly by conglomerates in its upper part. The section also demonstrates interlayers of lava ash. The thickness of the horizon varies within the 180-500 m range. The deposits of the alluvial cones formed by rivers and temporary streams correspond to that age in the Ganykh-Ayrichay Depression formation. They are mostly bench gravels. On the margins of the alluvial cones, rudaceous deposits are gradually replaced by fine-grained ones.

The lithofacies of the Khazarian deposits testify to restricted marine sedimentation in comparison with the Bakinian Horizon.

The Khvalynian Horizon

The Khvalynian deposits are separated from the Khazarian ones by the Atelian continental Suite. Those deposits are not well developed in Azerbaijan. Nonetheless, the Atelian Regression was considerable and was accompanied by a sea-level drop to below -45 m. The transgression of the Lower Khvalynian Basin that followed and reached the absolute elevation of +55 m was the greatest in the whole Pleistocene history of the Caspian (Fig. 12).

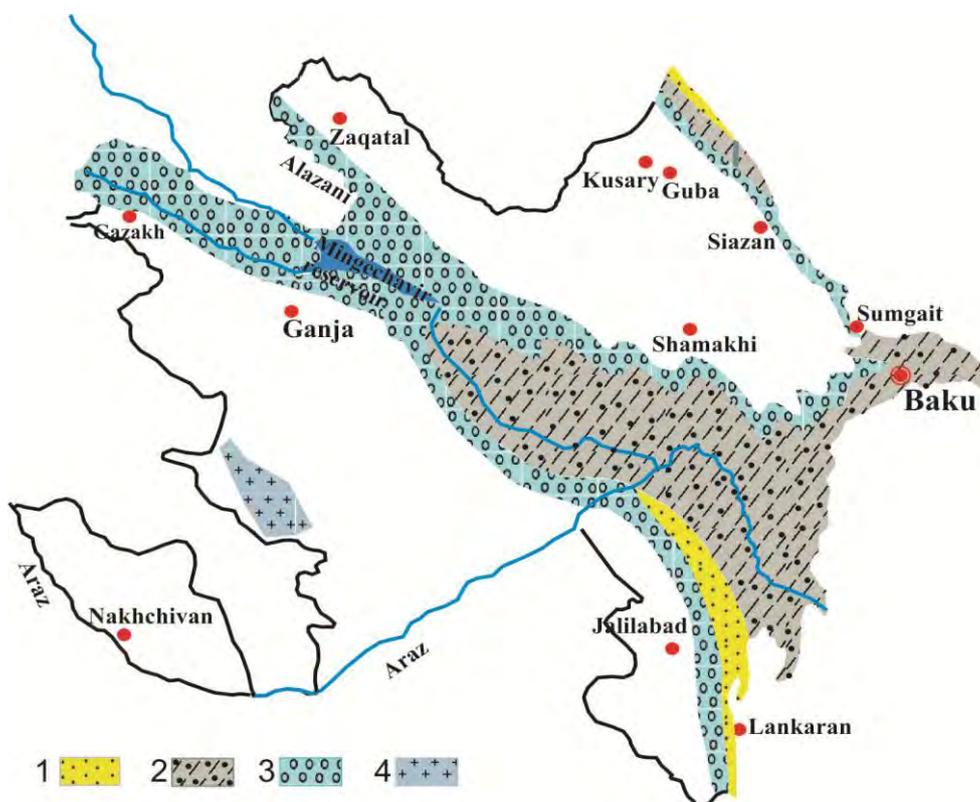


Figure 12. Schematic lithofacies map of Khvalynian stage sediments: 1 - sands and coquina; 2 - sandy-muddy sediments interbedded with pebbles and rare beds of coquina; 3 - continental coarse sediments; 4 - volcanic rocks (from Alizadeh, 1987).

The age of the Lower Khvalynian deposits is a subject of many disputes. According to the TL method findings, the deposits are dated 71 ± 8 ka BP - 42 ± 5 ka BP (Leontyev et al., 1975; Rychagov, 1977), while the radiocarbon method suggests 18.2 ± 0.3 ka BP - 15 ka BP (Svitoch, 1991).

The short-term drop of the Caspian Sea's level that divided the Lower Khvalynian and Upper Khvalynian subhorizons in the basin's development was replaced with the substantially smaller-scale Upper Khvalynian Transgression. Both Khvalynian substages are characterized by specific faunistic complexes: the Lower Khvalynian substage by *Didacna paralella* Bog., *D. cristata* Bog. and *D. praerrigonoides* Nal. et Anis and the Upper Khvalynian substage by *Didacna praetrigonoides* Nal. et Anis. and *D. trigonoides* Eichw.

The age of the Upper Khvalynian deposits according to the TL method (Leontyev et al., 1975) is set at 14.6-18.5 ka BP to 12.8-9.6 ka BP (14C).

The Khvalynian Horizon is represented within the continental facies in the Ajinohur Area.

The New Caspian Horizon

The beginning of the Holocene is dated 8-10 ka BP. It was marked by one of the most substantial regressions of the basin, the Mangyshlak Regression, where sea level dropped to -50 m and even to -90 m as some data indicate (Aliyeva et al., 2010)..

The next rise of the Paleo-Caspian level—the so-called New Caspian Transgression—was very much inferior to those that had occurred in the previous history of this basin. The New Caspian Transgression had the following two phases: the Lower New Caspian Transgression and the Upper New Caspian Transgression, to which correspond the Lower and Upper New Caspian deposits characterized by the specific faunistic complex: *Didacna trigonoides* (Eichw), *D. crassa* (Eichw), and *D. baeri* (Grimm.).

The Lower New Caspian deposits form a strip of beach barriers and accumulative terraces composed of sands with the inclusion of pebbles, gravel, shelly rocks, and bench gravels in the Absheron peninsula and in SE Gobustan.

In the Kura Depression, the Lower New Caspian deposits are represented by the marine clayey sands and alluvial sediments. Their boundaries do not go beyond the eastern part of the Mugan Steppe.

The beginning of the New Caspian (modern) Age is detected by the invasion of the mollusk *Cardium edule* Linne (*Cerastoderma lamarckii*) from the Black Sea dated to 1 ka BP. Another Black Sea resident, *Mytilaster lineatus* Gmel., colonized the Caspian Sea in the 1920s, to be followed by *Abra ovate* in 1939 and *Balanus improvisus* in 1954.

The Upper New Caspian deposits are developed along the beach line. In Ajinour, the Holocene sediments are developed in the continental facies.

Archaeology of the region

The archaeological sites to be visited during the Field Trips include several sites. We will observe Gobustan with its famous petroglyphs of the Mesolithic age. Plans include visits to some archaeological and historical places in Baku: the Shirvanshakh Palace constructed during the period from the XIIIth to the XVIth century; the Maiden Tower (the most mysterious monument of Baku) of which the unique construction has no analogues in the East. The Palace complex and Maiden Tower are included in the UNESCO list of World Heritage sites. We will also visit the historical-cultural reserve of Lagich that dates from the XV-XIX centuries, the first Christian Church in the Caucasus dated to the 1st century, excavations of an ancient town located in the suburbs of Gabala city, which for six centuries (until the

VIth century) was the capital of Caucasian Albania, and famous for the beautiful wall paintings of Khan Palace in old Sheki town.

Presently, practically all the stages in the 2 million year history of human presence in Azerbaijan can be examined and studied only by means of archaeological excavations with the exception of the past several centuries. Research conducted in the last years has uncovered the early man sites of the Old Stone Age as well as the diverse settlements and burial places of different periods: early agricultural cultures dating back to the Neolithic and Eneolithic ages; the various Bronze Age stages, antique and Early Medieval towns with numerous necropolises that contain different types of burials, and several medieval towns of Azerbaijan that stand out for their bright material culture.

The Old Stone Age

Archaeological monuments of this stage were studied in Sharur Province of the Nakhchivan Autonomous Republic (the Hamza cave site) and in the Jeyranchel territory of the Gyanja-Gazakh Region. The field work recovered substantial materials that make it possible to reconstruct the life patterns and habits, the stone and bone tools, the ways to obtain food, and other issues pertaining to the Stone Age.

The discoveries of that period that are both significant and of utmost scientific interest include the massive chopper-type tool made of volcanic andesite that was found at the Lower Paleolithic site called Sakkizli in Jeyranchel. Tools of analogous type are well known from the lower horizons of Azykh Cave, which permits us to include this region of Azerbaijan in the area of the most ancient human settlement outside of Africa that existed as early as the Lower Paleolithic Age.

The Neolithic and Eneolithic Ages

The monuments of these periods that reflect the development of early farming and cattle-breeding economies have been in the research focus within Azerbaijan over the past few years. The heightened interest in the monuments of those ages is manifest also at the numerous archaeological centers of Germany, Japan, France, USA, and other countries. Special attention has been paid to those periods' monuments found in West Asia and the South Caucasus as the most ancient centers of agriculture, cattle-breeding, and a number of crafts. In 2010, the archaeologists of the Institute undertook large-scale field research into sites in the Nakhchivan Autonomous Republic as well as in the Gyanja-Gazakh, Mil-Karabakh, and Mugan regions. Excavations conducted in the Neolithic settlements of Hassansu in Agstafa Province and Gheytepe in Tovuz Province dating back to 7,000 B.C. have made it possible to determine that agriculture originated in the territories of Azerbaijan and the whole of the South Caucasus 1,000 years earlier than had previously been thought; it was proven also that the region's agriculture had native roots. In this sense, research at the Hassansu site proved of special interest: the study of the ancient settlement's lower horizons found the rectangular building remnants and the archaic stone implements dating to the Pre-Pottery Neolithic Age that is more ancient than the early agricultural monuments of the Shomutepe Type found there previously. That made it possible to assert the ancient and local roots of the agricultural communities in the territory of Azerbaijan.

Research in the Gheytepe settlement conducted together with archaeologists from Japan has been important for clarifying the issues concerning the establishment and development of early agricultural and cattle-breeding communities in Azerbaijan. This cooperation offers the most advanced technologies in the study of this historical site. The material culture artifacts, osteological fragments, and other items found in Gheytepe have been sent to Japan for precise trace element analysis, radiocarbon dating, paleobotanic and paleozoological examinations

that will be done at laboratories fitted with modern equipment. Doubtless, the lab test findings are going to play an immense role in addressing a number of problems related to the emergence and development of early agricultural communities in Azerbaijan. The numerous material culture artifacts dating back to the Neolithic and found during the excavations at such sites as Polutepe in Jalilabad Province, Ahadtepe in Agdam Province, and Kamiltepe in Agjabedi Province are of great scientific interest. For instance, more than 9,000 diverse pottery fragments dating back to the 5th century B.C. and found in Polutepe prove the high level of advancement in pottery craft during the Neolithic.

Excavations in the Eneolithic settlements of Kamiltepe in Agjabedi Province, Selakhan in Agstafa Province, and Akhaptepe in Jalilabad Province demonstrated the broad ties between the tribes of Azerbaijan and those of West Asia. The artifacts found at those sites will contribute importantly to reconstructing and studying those ties.

Eneolithic settlement excavations carried out during 2009 as well as Neolithic and Eneolithic site studies in Azerbaijan have produced a substantial reference collection for the study of lifestyle, economy, and the material as well as spiritual culture in those periods.

The need to study the continuity of the material and spiritual cultures of the different historical periods is one of the most significant goals of Azeri archaeology. The continuity of the Kura-Araxes Culture of the Early Bronze Age with respect to the preceding Eneolithic cultures is subject to ongoing scientific discussions, for instance. Inquiry into the stratified settlements of Ovchulartepesi and Khalaj in the Nakhchivan Autonomous Republic is of importance from this point of view, for it is the materials found in those settlements—and especially the pottery artifacts—that let us trace the transition from the Late Eneolithic Age to the Kura-Araxes Culture of the Early Bronze Age. At the same time, the examination of those sites sheds light on a significant point in the archaeology of the whole Caucasus—namely, that of the formation area of the early stage of the Kura-Araxes Culture, the area from whence it spread over the very large territory of West Asia and the Caucasus. The numerous and undisputable research findings from Ovchulartepesi and Khalaj prove that the territory of Nakhchivan was one of the early areas where the Kura-Araxes archaeological culture was formed.

The Bronze Age

Early Bronze Age artifacts were examined in Khachmaz (Serkertepe) and Sharur (Makhta 1) provinces as well as in the Absheron peninsula. Study of the settlements and burials produced interesting materials depicting the lifestyle and routines of that period's people as well as their material and spiritual culture, religious views, etc.

In Nakhchivan, the Early Bronze Age site at Kultepe 2 was examined. It is a unique monument of the early town-dwelling civilization that is akin to the most ancient city states of Mesopotamia and Asia Minor. This year, research ended with the discovery of workshops in the area of the ancient town; they provide for the reconstruction of the full artisan production cycle.

Valuable materials and findings related to the burial rites of the Middle Bronze Age came from the burial mound in Oguz Province. Numerous and diverse pottery and bronze items were found in the mound's burial chamber; also, a very interesting burial rite was discovered there. It should be mentioned that mounds of this type are very much understudied in Azerbaijan presently. The discovery of this mound-type necropolis in Oguz Province and the study of its burial mounds let us inquire into the wide distribution of this culture in Azerbaijan as well as in the whole of South Caucasus.

The intensive progress of food production and the associated new social phenomena in the Late Bronze Age and the Early Iron Age are examined by studying the diverse artifacts. Late Bronze and Early Iron Age settlements were excavated in the Gyanja-Gazakh, Nakhchivan, and Karabakh regions in 2009 (Shahtakhti, Sarvantepe, Sumbatan, Oglantepe, and others); diverse tombstones (Gheranboy, Ghedabey, Gheyghel, Agdam and other provinces) were excavated from the same periods and examined during the same year. The excavations have yielded evidence for the people's lifestyle in the Late Bronze and the Early Iron ages as well as on their economic activities, and the economic, political, and cultural relations with the world around them.

Research conducted by the international US-Azeri archaeological expedition at the early town site Oglangala (dating back to the 1st half of the 1st millennium B.C.) in Sharur Province was a milestone in the study of the problems of this early town-based culture. Those excavations gave the researchers important data on practically all aspects characteristic of the early town-based culture. The findings once again confirmed that Oglangala and the other sites of the same circle belonged to a town-based civilization.

The research that the international (Azerbaijan, Germany, Georgia) expedition undertook at the Tara-Jamirli ancient town site in Shamkir Province that dates back to the middle of the 1st millennium B.C. produced very important data on the largest city-like settlement of its time in the Caucasus. There, they are studying the town planning structure, the construction equipment used, and a number of other issues linked to ancient town planning and building. Excavations showed that the active town building and a boisterous urban life were present in the territory of Azerbaijan as far back as the middle of the 1st millennium B.C.

The Antique Period

Excavations at the site of Gabala, the capital city of Caucasian Albania, should be highlighted of all the monuments of that period currently under study. Archaeologists have excavated the foundations and wall remnants of the public buildings that stood in ancient Gabala. They also found numerous materials depicting the active and varied urban life, including trade and economic relations. The wealth of numismatic evidence found there depicts the high level and the breadth of those relations.

The large ancient town site dating back to the Antique and Early Medieval ages is being researched in Agjabedi Province. The presence of ancient towns referenced by classical authors in that region is now confirmed physically. Thus, the location of yet another Albanian town of the 29 mentioned in the ancient annals has been found successfully.

The Middle Ages

Large-scale excavations were in progress in the medieval town site of Shamkir, in medieval Shamakhi, and at the site of the ancient town of Shahargah in Kurdamir Province in 2009. The excavation conducted at Shamkir was considerably expanded, and new medieval horizontal structures were found and studied within the area of the town's citadel. The architectural edifices that probably served as one of the residences of the Shirvanshahs were found and examined in part in the territory of medieval Shamakhi. The Shahargah excavation confirmed the presence of another major medieval town in Shirvan; the research is continuing currently in order to identify that town.

Thus, the archaeological exploration of the diachronous and diverse monuments of history carried out during 2009 have given researchers a wealth of evidence that will be used to shed light upon a number of yet understudied problems in the history of the material and spiritual culture of the Azeri nation from the most ancient times to the Late Middle Ages.

Beyond any doubt, all the achievements of archaeology in Azerbaijan come as the outcome of the care and support that our Institute has been receiving from the government over the past years. Fully alive to the responsibility bestowed upon them, the staff of the Institute intends to increase the yield from the archaeological study of all the periods of ancient Azerbaijan in the future by stepping up large-scale field work and scientific interpretation of the findings.

Description of Field Trips

October, 15: Historical sites (by foot)

Stop 1.1. The Maiden Tower and Shirvan Shakh Palace

The Maiden Tower, also known locally as Giz Galasi and located in the Old City of Baku in Azerbaijan, is an ancient tower. Built in the 12th century as part of the walled city of Baku, the Maiden Tower with the Shirvanshahs' Palace (Figs. 13, 14) dated to the 15th century, forms an ensemble of historic monuments which have been inscribed on the UNESCO World Heritage list.



Figure 13. The Maiden Tower.



Figure 14. The Shirvan Shakh Palace.

It is one of the most noted landmarks and Azerbaijan's most distinctive national emblems, and it is thus featured on Azeri currency notes and other official letterheads. The Maiden Tower houses a museum, which presents the story of the historic evolution of Baku city. It also has a gift shop. The view from the roof takes in the alleys and minarets of the Old City, Baku Boulevard, the De Gaulle house, and a wide vista of Baku Bay. In recent years, the brazier on the top has been lit during the nights of the Novruz festival.

October, 15: Geological sites (by bus)

Stop 1.2 -1.3. Exposures of Apsheronian stage sediments at Bakinskie Ushi and Garagush mounts

We will visit two outcrops of Apsheronian stage sediments: Bakinian Ushi and Garagush mountain at the boundary between the Absheron peninsula and the Gobustan area (Fig. 2).

Stop 1.2. The Bakinskie Ushi

The Bakinskie Ushi section (Fig. 15A) is located to the right of this road (25 km from Baku); the complex of sediments constituting this section is composed of Akchagylian and Apsheronian deposits. To the southwest of the Gezdek plateau, within the boundaries of the Puta valley and south of the village of Kergez, the Bakinskie Ushi mountain rises to a height of 383 m. It consists of 2 peaks, the northern (Kergez) and the southern (Tokhtaly-Kaya).

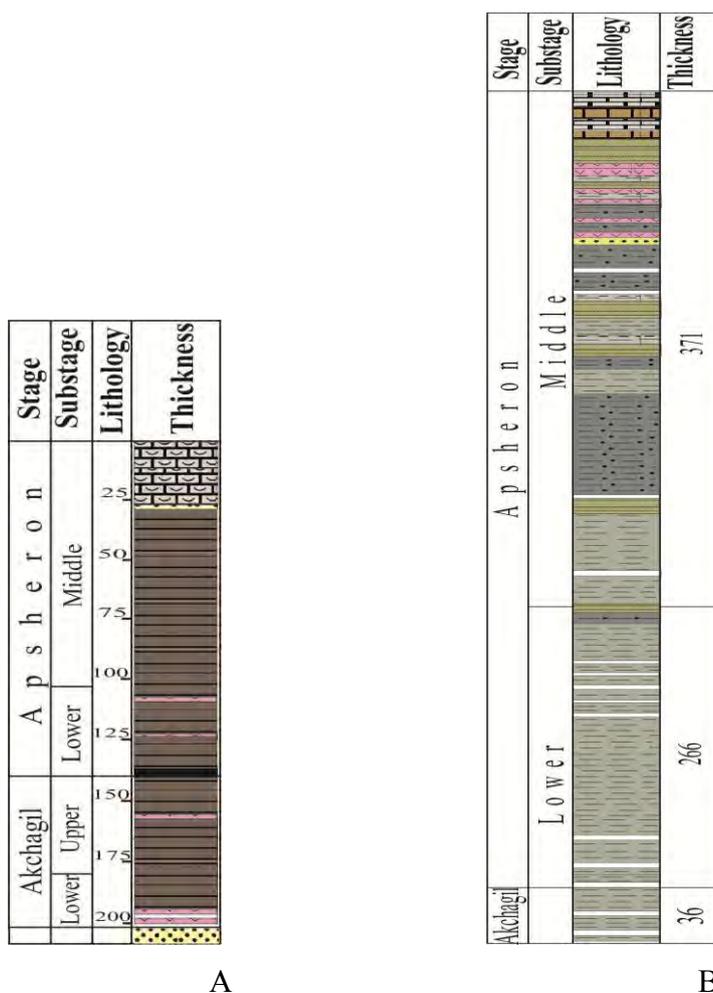


Figure 15. Sections of Apsheronian sediments in the Absheron peninsula: the Bakinskies Ushi section (A); the Garagush section (B).

The Akchagylian stage is represented by 3 substages. The Lower Akchagylian deposits are represented by grey, dense, carbonaceous shales with freshwater ostracods. In the Middle Akchagylian section, sands with *Cyprideis littoralis* predominate. The Upper Akchagylian is characterized by alternating grey and brown sandy shales with intercalated beds of friable sandstone and volcanic ash. Salt water ostracods are present.

The Apsheronian sediments are conformably bedded on Akchagylian strata and consist of 2 substages: the lower and middle. The lower Apsheronian, about 40 m thick, is mainly represented by dark-grey, blue-grey, and grey-brown, slightly sandy shales with interbeds of grey sand. In the lower part, there is a bed of black non-carbonaceous shale. Regarding fauna, the lower substage is characterized by the following mollusks: *Monodana laevigata*, *M. sjoegreni*, *Parapscheronia raricostata*, *Limnaea lossonae*. The Middle Apsheronian substage is about 100 m thick and represented by grey, dark-grey, and grey-brown sandy shales with thin intercalating beds of grey sand, sandstone, and gypsum. The upper part of the Middle Apsheronian substage is capped by a 30 m limestone-coquina, at the base of which is an intercalation of coarse-grained sandstone and gravel. The limestone-coquina consists of the following mollusk shells: *Monodacna leibatica*, *Apscheronia propinqua*, *A. eyridesma*, *Hyrkania hyrcana*, *Dreissena distincta*, *Theodoxus pallasii*.

Stop 1.3. The Garagush mountain

Garagush mountain is 38 km to the southwest of Baku in the vicinity of the Primorskiy settlement (3-3.5 km). The section is located to the right of the Baku-Salyan motorway.

The Garagush section (Fig. 15B) is accepted as being the lectostratotype of the Lower and Middle Apsheronian stage.

On the northeastern slope of the mountain, rocks of an earlier Akchagylian age are exposed and represented by dark-brown, dark-grey, and black shales with mollusk fauna *Maetra*, *Dreissena*, *Micromelania*. Here, Apsheronian sediments conformably overlie Akchagylian deposits.

The Lower Apsheronian sediments, 35 m thick, are represented by grey and dark-grey carbonaceous shales with intercalated gypsum and occasional mollusk shell remnants: *Lymnea*, *Dreissena*, *Micromelania*. Middle Apsheronian sediments are composed of yellow-grey, yellow-brown, and green-yellow sandy shales with interbeds of gypsum, volcanic ash, and limonite, brown-grey, dense fine grained sandstones, sand, and limestones. The section is completed by a thick limestone bed (the thickness varies from 5-7 m to 40-42 m) with an abundance of macrofauna: *Hyrkania hyrcana*, *H. subintermedia*, *Apscheronia propinqua*, *Parapscheronai eurydesna*, etc. Regarding microfauna, the Garagush Middle Apsheronian section is characterized by abundant ostracod shells.

October, 16: Geological sites (by bus)

This field trip will be devoted to visiting the younger sediments of Bakinian age. The reference section is located in the southwestern part of the Absheron peninsula, about 15 km from the Baku city center (Fig. 16).

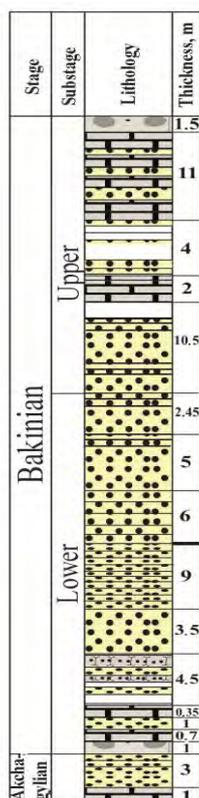


Figure 16. Stratigraphic subdivision of the classical stratotype "Mountain of Bakinian Stage" in the Absheron peninsula.

Stop 2.1. Classic stratotype of the Mountain of "Bakinian Stage", examples of the rapid Caspian Sea level changes in the Pleistocene successions.

The classic stratotype of the Mountain of "Bakinian Stage" located in the southwestern part of the Absheron peninsula is a hypsometrical height, situated on the western slope of the

Shikhov Ridge and first described by D.V. Golubyatnikov in 1914 (Fig. 16). The outcrop is located 5-5.5 km to the southwest of Baku, near Shikhovo beach. On the outskirts of the town, in the region of the settlement of Shikhovo to the right of the road, individual Middle Apsheronian exposures appear. To the west of the Stratotype of the Mountain of “Bakinian Stage”, is the vast Yasamal' valley, the western and eastern slopes of which are represented by Middle and Upper Apsheronian beds. The central part of the valley consists of Lower Apsheronian, the Akchagylian, and Productive Series sediments.

The rocks constituting the Mountain of “Bakinian Stage” consist of Upper Apsheronian and Bakinian sediments, between which there is a 0.5 to 1 m thick bed of conglomerates presumably dated to the Tyurkyanian age. Exposures of the contact between Bakinian sediments and the basal conglomerates can be easily traced at the foot of the western slope of the mountain.

The Bakinian Horizon consists of coastal, shallow water sediments and is represented by yellow-grey sandstones, shales with silty layers, fine grained sand, and coquina, with a total thickness of 60 m. Based on the faunal complex, the Bakinian sediments are divided into two parts—the lower part, 33 m thick, is characterized by *Didacna parvula* and *D. catillus* mollusks, and the upper part, 27 m thick, is represented by limestone-coquina, sand, and sandy shales, and sandstone with *Didacna rudis*. Based on ostracod fauna, four layers can be identified: the first three of them belong to the Lower Bakinian, and the fourth one belongs to the Upper Bakinian substages. The Bakinian sediments are transgressively overlapped by Lower Khazarian-Gyurgyan deposits represented by thick (5.8 m) beds of dark-grey and black conglomerates.

Examples of the rapid sea-level changes

During the field trip, we will also visit the Pleistocene outcrop in the Shikhovo locality, which is one of the best examples of rapid sea-level change (Fig. 17). In this outcrop, we will observe a high order full sea-level cycle including low stand, transgressive, and high stand tracts.

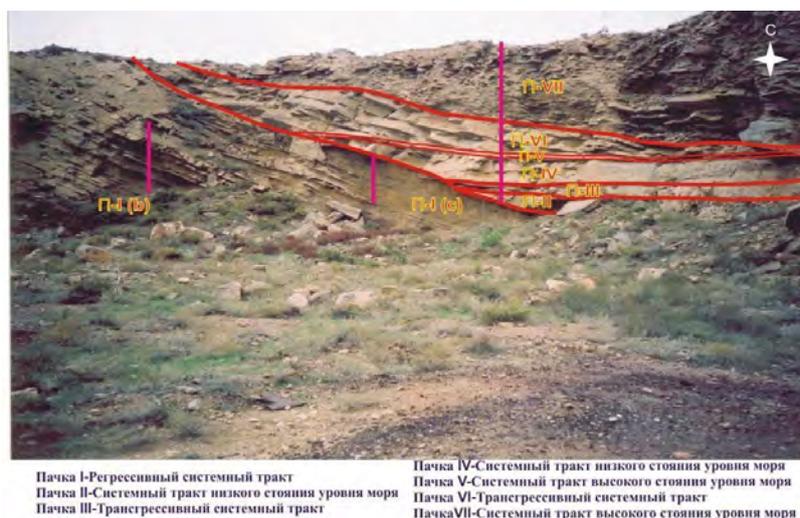


Figure 17. Exposure of Pleistocene sediments with clearly identified high frequency system tracts.

Stop 2.2. Mud volcano Dashgil

Azerbaijan is a “capital” for mud volcanoes. There are more than 300 mud volcanoes located onshore and offshore within the South Caspian region. During this field trip, we will visit one of the most active mud volcanoes in eastern Azerbaijan called Dashgil (Fig. 18). The volcano

is located 2-2.5 km north of Alyaty railway station, which is situated 60 km southwest of Baku. The volcanic cone is a flat uplift, elongated in the east-west direction. Through historical records, it is known that this mud volcano has major eruptions every 6–32 years. Among solid ejections of the volcano are oil-saturated Miocene carbonate rocks and sandstones of the Middle Pliocene age.



Figure 18. The mud volcano Dashgil.

October, 16: Archaeological sites (by bus)

Stop 2.3. Gobustan National Park

Gobustan National Park—officially Gobustan Rock Art Cultural Landscape—is a hill and mountain site occupying the southeast end of the Greater Caucasus mountain ridge in Azerbaijan, mainly in the basin of the Jeyrankechmaz River, between the rivers Pirsagat and Sumgait. It is located west of the settlement of Gobustan, about 64 km southwest of the center of Baku on the west bank of the Caspian Sea. The territory of Gobustan is cut up with numerous, sometimes rather deep ravines (in Azerbaijani: *gobu*). That is a suggested origin of the Gobustan geographical name. In 1966, Gobustan was declared a national historical landmark of Azerbaijan in an attempt to preserve the ancient carvings, relics, mud volcanoes, and gas-stones in the region.

The preserve is located 70 km from Baku city and covers the area of the mountains Bejukdash, Kichikdash, Djingirdag, Shongar, Shikhgaya, and the Yazili hill, which were taken under legal government protection. These mountains are located near the Caspian Sea, in the southeast part of Gobustan. In 2007, Gobustan was declared a UNESCO World Heritage Site considered to be of "outstanding universal value" for the quality and density of its rock art engravings, for the substantial evidence the collection of rock art images presents for hunting, fauna, flora, and lifestyles in prehistoric times, and for the cultural continuity between prehistoric and medieval times that the site reflects.

The Gobustan Rock Art Cultural Landscape covers three areas of a plateau of rocky boulders rising out of the semi-desert of central Azerbaijan, with an outstanding collection of more than 6,000 rock engravings bearing testimony to 40,000 years of rock art. The site also features the remains of inhabited caves, settlements, and burials, all reflecting an intensive

human use by the inhabitants of the area during the wet period that followed the last Ice Age, from the Upper Paleolithic to the Middle Ages. The site, which covers an area of 537 ha, is part of the larger protected Gobustan Reservation.

During the field trip, we will visit the Gobustan State historical-artistic preserve, which is an open-air museum. The preserve studies rock carvings (Fig. 19), records, and protects them. Gobustan rock carvings were discovered at the foot of the mountain Djingirdag and on the top of the hill Jazili in 1939.



Figure 19. Gobustan rock carvings.

Since 1947 the monument has been systematically investigated. The first discoverer of the Gobustan carvings was the Azerbaijan archaeologist I. Djafarzadeh. At the present moment, more than 6000 carvings or signs have been registered on more than 1000 rocks. They differ from each other by the variety of their subject matter. Mainly among carvings of Gobustan, pictures of men and women carved in full face and in profile as a reverse bas-relief are of peculiar importance. The men are shown being strong, dressed in loin-cloths, and armed with bow and arrow. The female figures are shown with protruded breasts and full hips. They were shown as continuers of the kin. Gobustan carvings consist of pictures of animals: bulls, goats, wild horses, deer, gazelles, pigs, lions, wolves, and other species. Pictures of animals mainly were depicted by contour lines. Gobustan rock carvings are also rich in their different compositions. One finds here scenes of collective labor, hunting, dance, harvest, battle, and other themes.

The Gobustan rock carvings cover the period from 40 thousand BP until the Middle Ages. Besides rock carvings, there are also epigraphic inscriptions in Gobustan. Arabic and Persian inscriptions, as well as the Roman inscription written by the twelfth legion of the Roman Empire and dated from the first century AD have been discovered here. Since the 1960s, archaeological excavations have been carried out here. As a result of the excavations, 20 ancient sites and caves as well as 40 burial mounds dated from Bronze Age have been discovered. More than 15 thousand varied objects are being kept in the archives of the preserve. Among them are labor and hunting tools, and goods of adornment. Labor tools of the Stone Age are mainly made of river-stone, silica, and bone. During excavations in the "Firuz" settlement, eleven human skeletons were found. The Gobustan rock carvings have been protected by the state.

October, 17: Geological sites (by bus)

Western Azerbaijan and Great Caucasus. Continuous outcrop of the Quaternary continental sediments of Ajinour

This part of the Field trip will be devoted to visiting of Quaternary sediments of the Ajinour region (Fig. 20). It is represented by marine and coastal-continental facies.



Figure 20. Geological map of Ajinour (from Shirinov and Bazhenov, 1962).

Stop 3. 1. Outcrop Padar “windows.” Continental sedimentation.

Eastward, near Garamaryam Ridge, the whole section of described deposits is expressed (Fig. 21A) by continental sediments of alluvial-proluvial origin. These continental facies of Bakinian and Khazarian age are well exposed in the incised valley cut by the Girdimanchay River in the alluvial fan (Fig. 22).

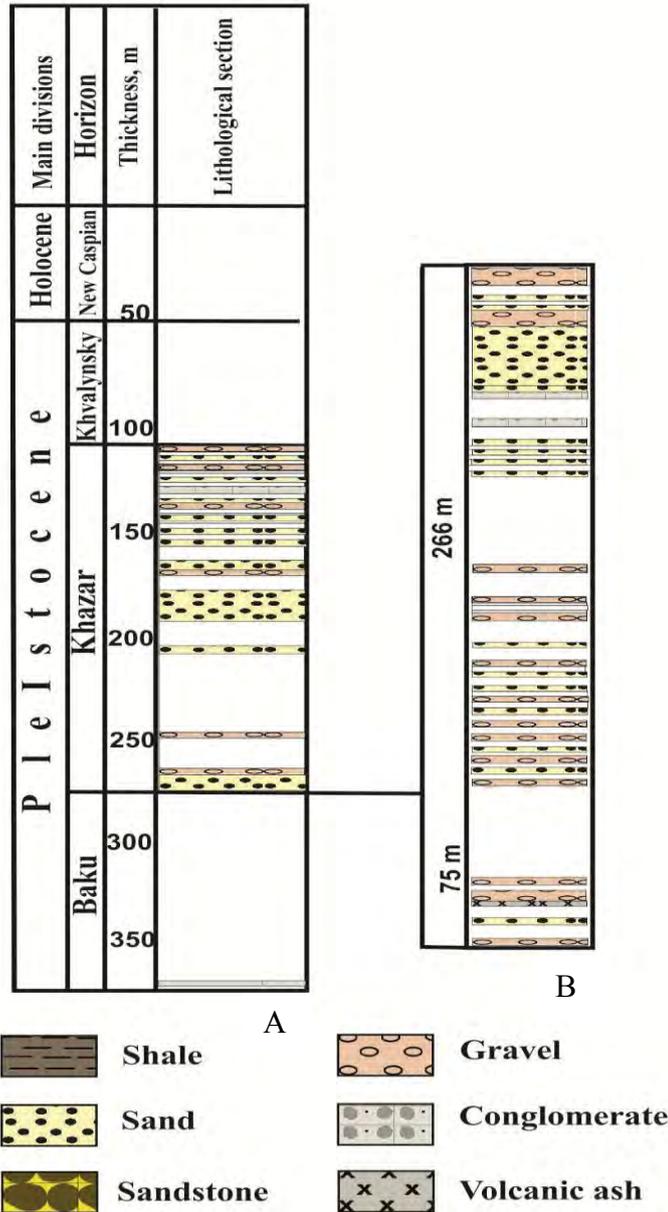


Figure 21. Garamaryan (A) and Turianchay (B) sections.

The continental sediments of Bakinian and Khazarian age are composed of alternating loams, conglomerates, and gravels in the lower part, and mainly by conglomerates in the upper part of the section. Also, interlayers of volcanic ash are observed in the section. The thickness varies between 180-500 m.

The Khvalynian Horizon is expressed in a continental facies represented by deluvial-proluvial loams with interlayers of loose conglomerates (20-30 m) filling the interridge valleys. The skeletal remains of animals as well as marine and freshwater mollusks *Zymmaticus*, *Planorbis*, *Corbicula* are exposed there. The 50-60 m series of alluvial-deluvial gravels, sands, and shales located northward of the Ganikh-Ayrichay valley is Khvalynian in age.

The Neocaspian Horizon is also developed within the continental facies. They include lacustrine-saline sediments of the Ajinour Lake depression, represented by salty oozes, and sandy loams with lenses and thin interlayers of salts (2-5 m); deluvial-proluvial loams and sandy-loams (20-30 m) frame the foothills of Hojashen-Geychay Ridge, as well as fill the synclinals of Ajinour.



Figure 22. Pleistocene (Bakinian, Khazarian horizons) alluvial sediments in the Padar “window” outcrop.

October, 17: Historical sites (by foot)

Stop 3.2. Historical village Lagich

Lagich or Lahij is a high mountain town located on the southern slope of the Great Caucasus, 71 km northeast of the railway station Myusyusli. It is a state historical and cultural reserve of the XV-XIX centuries, which is included in the international tourist route "Silk Road."

Built on the basis of quarterly development, Lagich is an original monument containing a medieval town with architectural art, cobbled streets and squares, developed sewage system and water supply. Age of the local sewer system is estimated at about 1,000 years (Fig. 23). All the buildings are made of stone interlaid with wood logs.

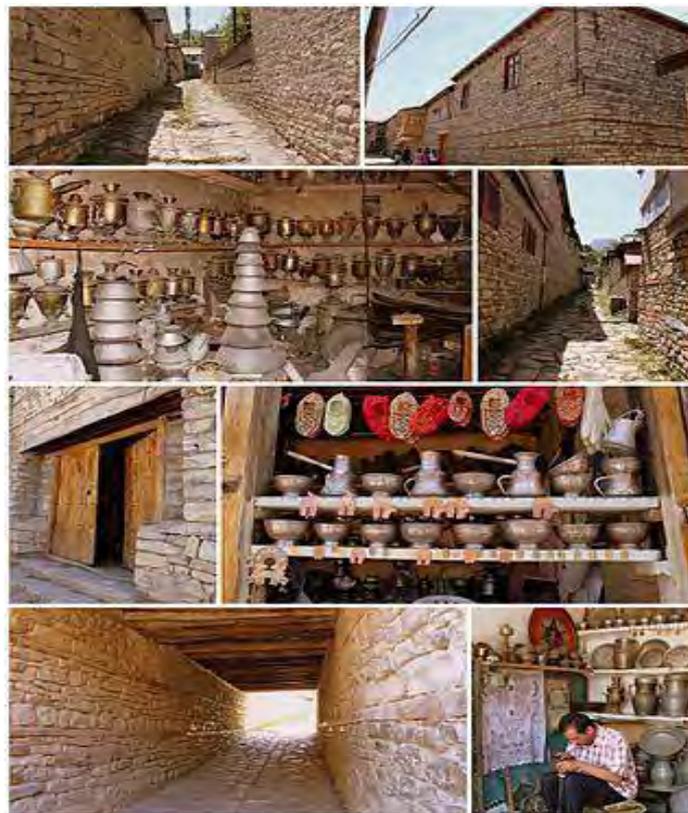


Figure 23. Lagich streets and copper utensils.

Lagich is one of the most famous settlements in the Caucasus and beyond since the Middle Ages because of its manufacture of cold steel and copper utensils, decorated with engraved ornamentation.

October, 18: Geological sites (by bus)

Stop 4. Exposure of the Quaternary continental and marine sediments of Ajinour (outcrop Turianchay).

The Quaternary deposits exposed along the Turianchay River are expressed by marine and continental facies (Figs. 21B, 24).

The lower portion of the section is composed of grey and grey sandy shales with sand and sandstone interbeds (300-400 m), and conglomeratic beds in the base of succession in the west. The predominantly marine sediments in the middle portion of the Apsheronian section (sandy shales, sands, and shell limestones) are unconformably overlain by the continental (loam soils, sandstones, and conglomerates).

The upper portion of the Turianchay section consists predominantly of continental lithofacies (brown shales with frequent interlayers of sandstones, bench gravel, and conglomerates with the lenses of brown loam soil and volcanic ash).



Figure 24. Outcrop of Apsheronian sediments in the Turianchay River valley.

October, 19: Historical sites (by bus)

Stop 5.1. Ancient town of Sheki

Stop 5.1.1. Khan palace in Sheki town and historical museum

Sheki is one of the oldest towns of Azerbaijan (Fig. 25).

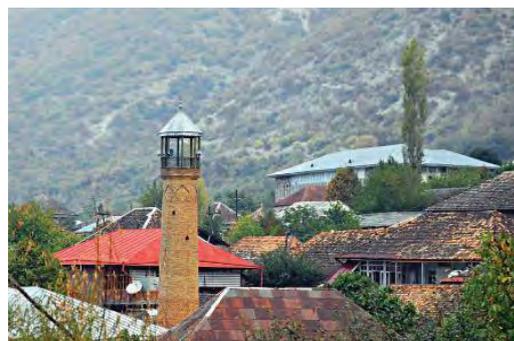


Figure 25. Old town of Sheki.

There is a suggestion that the name of the town goes back to the Turkish ethnonym of the Sacks, who reached the territory of Azerbaijan in the 7th century B.C. and occupied it for several centuries (<http://aze.info/shekikish>).

Sheki is famous for the 18th century Khan's Palace, a historical and cultural monument of world importance, which is part of the State Historical-Architectural Reserve "Yukhari bash" (Fig. 26).

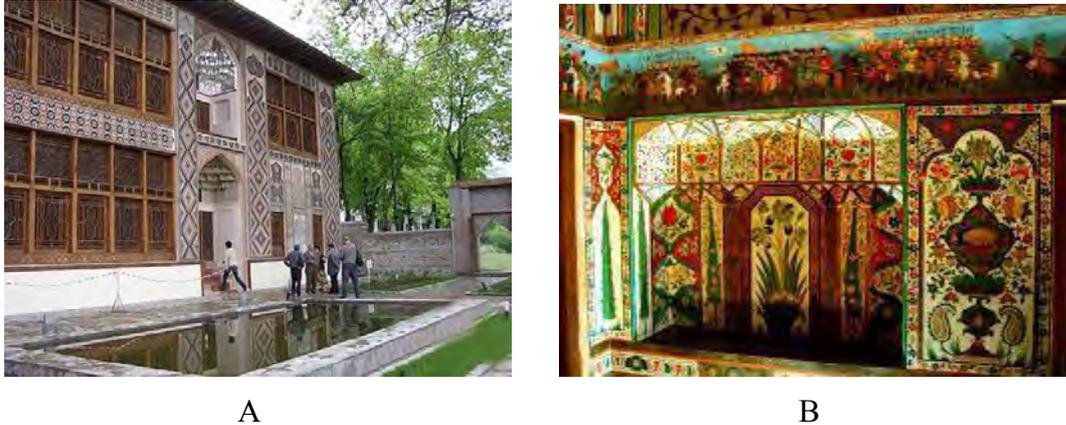


Figure 26. The Khan palace in Sheki town (A); wall paintings in the Khan palace (B).

It was built in 1762 by Hussein Khan who was also well known as a poet. The two-storied building is decorated with magnificent frescos (one 24 m long) and exquisite stained glass work, known as shebeke.

The Palace is considered to be one of the best samples of the palace architecture in the Caucasus and one of the pearls of the Islamic East. Along with the historic part of Sheki town, the palace is a candidate for inclusion in the UNESCO World Heritage List.

Stop 5.1.2. First Christian church in the Caucasus in Kish—"Mother of All Eastern Churches" (Sheki town suburb)

The church in Kish village is the first Christian church built in Caucasus (Fig. 27).



Figure 27. "Mother of All Eastern Churches" in Kish village.

According to VII-VIII century historian Moses Kalankatuy, Euliseus who was a follower of apostle Faddey was sent by the Jerusalem patriarch Jacob to Caucasian Albania and established the first church here. This church is in Kish village near Sheki and was erected in 62 A.D. thus making it the first church to be built in the Caucasus, even earlier than the first church in Armenia.

The territory of the temple is a cemetery, where each burial place is under the glass cupola. Some sarcophagi leave a great impression. Under the glass, one can see the remains of humans of who were 2.5 m in height and even taller. Ancient Albanians did not resemble the local population of today's Kish. They were of gigantic height, with golden hair and white skin. This is absolutely uncharacteristic of Caucasian nations and oriental populations in general.

There are some other mysteries that this ancient place still keeps. The internal walls of the church were repeatedly repaired during the two centuries. Today, white stones represent their original look. However, in one place, one can find a layer of ancient plaster. Locals believe that if one attaches a coin to this plaster and makes a wish, then the wish will come true if the coin is stuck to the wall. This could only happen if the person has a clear soul and conscience (<http://aze.info/shekikish>).

October, 19: Geological sites (by bus)

Stop 5.2. Reference outcrop of the marine Bakinian sediments at Bozdag

Located on the coast of the Mingechavir Water Reservoir. We will see regressive contact beds between Apsheronian and Bakinian sediments expressed by conglomerates (Fig. 28). Overlying Lower Bakinian sediments are composed of coarse to medium sands (Fig. 29) and sandstones striking along Mingechavir Lake and gradually subsiding toward the lake (Fig. 30).



Figure 28. Conglomerates at the base of the Bakinian succession.



Figure 29. Lower Bakinian coarse sediments with a minor unconformity overlying the Upper Apsheronian mudstones.

Abundant deformation bands testify to the active tectonics of the area (Fig. 31).



A

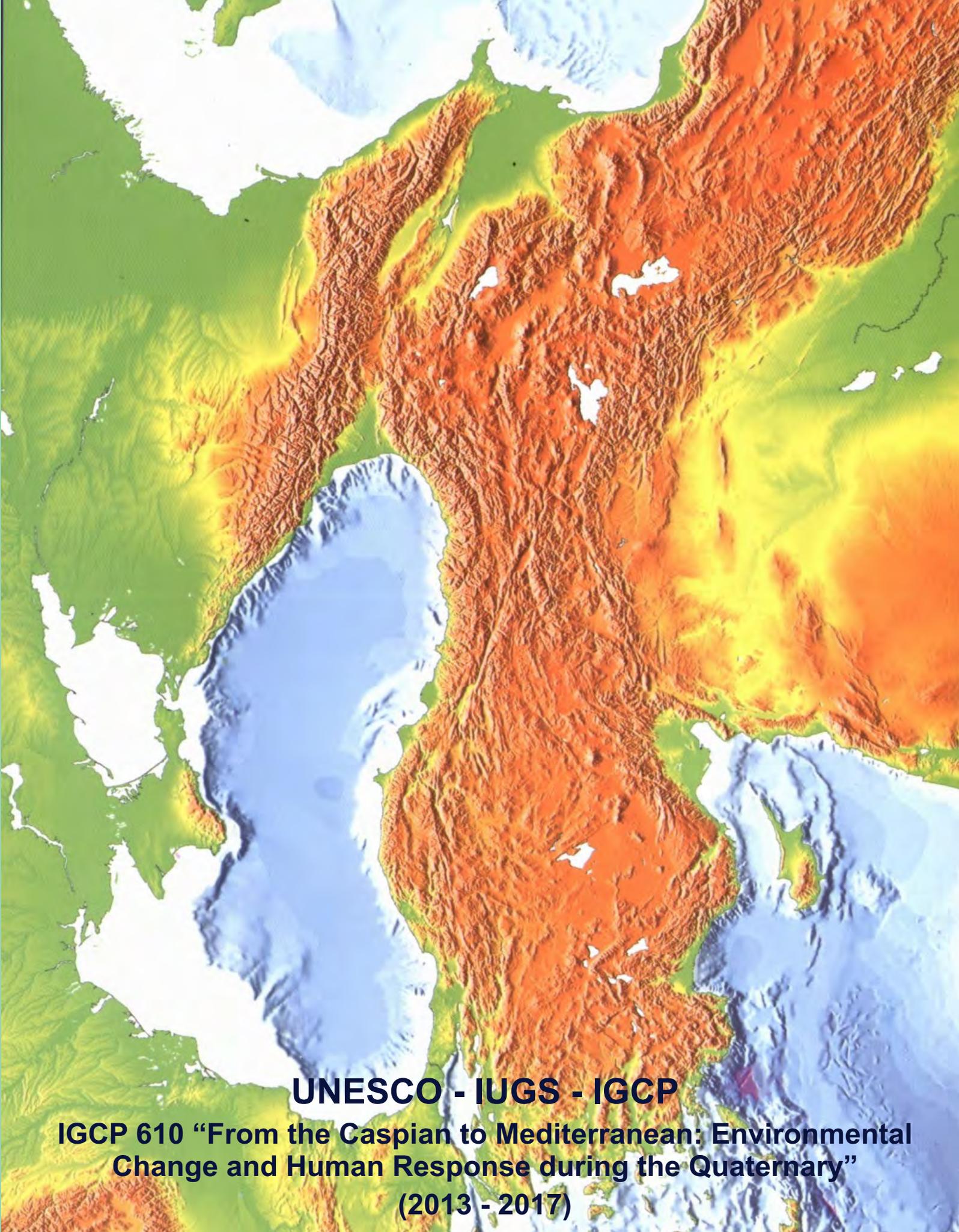
B

Figure 33. Ruins of ancient Gabala (A); excavations in Selbir and Gala sites (B).

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