



# THE TURGAI GEOGLYPHS EXPEDITION

10 – 15 SEPTEMBER 2016

## About us

QazaqGeography (“Kazakhstan National Geographic Society” Republican Public Association) was established in October 2013 with the support and at the initiative of Karim Massimov, the Chairman of QazaqGeography’s Board of Trustees.

QazaqGeography’s mission is to become a leading organization that develops geography and related sciences about nature, society and culture; to be well-known in Kazakhstan and abroad for the values of patriotism, civic consciousness, openness, objectivity and impartiality. QazaqGeography implements projects aiming at improving quality of knowledge about Kazakhstan and the world as a whole. The society works within the framework of 5 priorities:

- «Geography and Climate»
- «Environment and Natural Recourses»
- «Biodiversity»
- «Tourism, Travel and Regional Studies»
- «Historical and Cultural Heritage, Ethnography»

QazaqGeography established a network of regional offices in Kazakhstan. Each regional office works as a center that gathers regional geography enthusiasts and conducts projects related to education and scientific investigations. As of today, QazaqGeography has 11 regional offices in: Akmola, Aktobe, East Kazakhstan, West Kazakhstan, Karaganda, Kostanai, Mangystau, Pavlodar, North Kazakhstan, South Kazakhstan regions and Almaty.



Since its establishment, QazaqGeography organized a number of scientific and cultural expeditions aimed at exploring Kazakhstan. Of the main projects in 2016 was the Expedition to Turgai Geoglyphs.



## General information on the geoglyphs



Nazca Lines, Peru

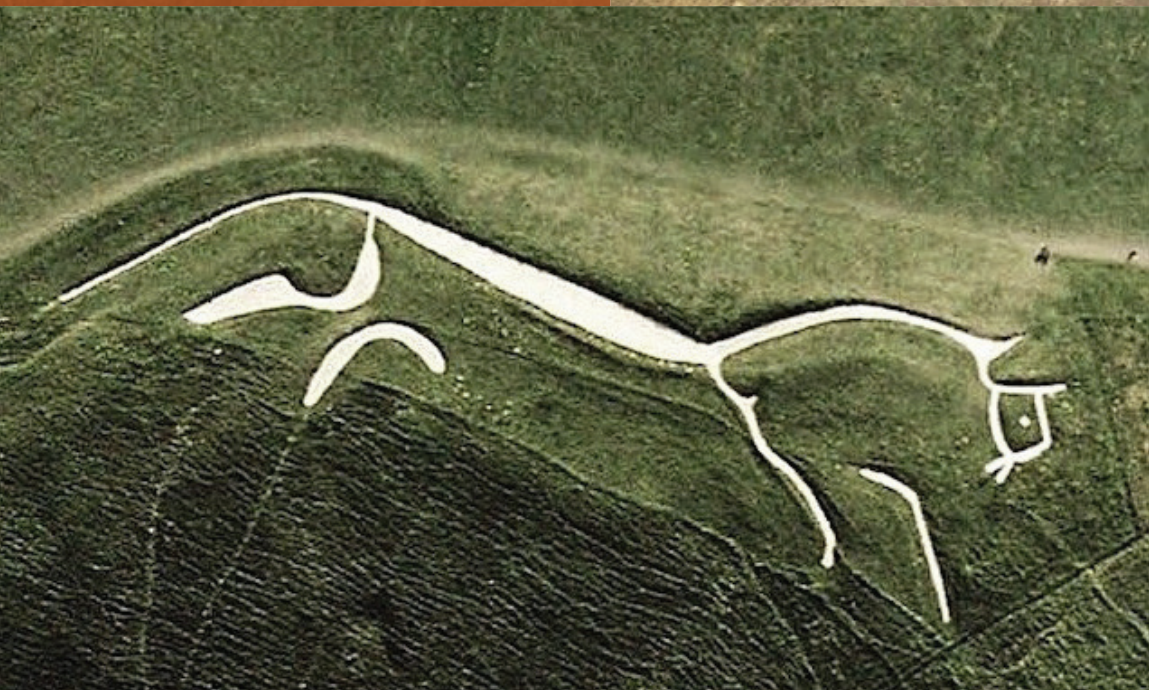
Amateur archaeologist Dmitriy Dey first discovered the geoglyphs in 2006 using the Google Earth program. The Ushtogai Square was one of the first geoglyphs discovered in 2007.

Geoglyph is a geometrically shaped sign or an ornament usually stretched over 4 meters in length. Many geoglyphs are so large that they can only be seen from the bird eye-view perspective (the most famous example is the Nazca Geoglyphs located in South America).

There are several ways to create geoglyphs: either by removing the top layer of soil along the perimeter of the pattern; or by creating the pattern line with stones or similar materials; or by planting trees that form the desired pattern. Nowadays the geoglyphs are sometimes used for the artistic purposes.



Marree Man, Australia



Uffington White Horse, England

## Expedition aims

The Turgai Geoglyphs Expedition was the first step in the series of QazaqGeography's projects aimed at creation of the new protected land object in Northern Kazakhstan. The Society aims to conduct further research that will enable researchers to launch joint international projects with the support of international and national organizations.

The Expedition (10-15 September 2016) was set to conduct preliminary study and establish the basis of comprehensive protection and destruction prevention of the Turgai Geoglyphs. The following steps have been made:

1. Location and dimensions determination by the GPS receivers of high-definition;
2. Survey with a tachometer, creation of the 3D-model;
3. The photo/video recording using the quadcopter,
4. The Georadar Scanning;
4. Preliminary archaeological assessment;
5. Geological survey.

The team included archaeologists, geologists, GIS-experts, journalists, photographers, videographers and the Monuments Protection Inspectorate representatives.



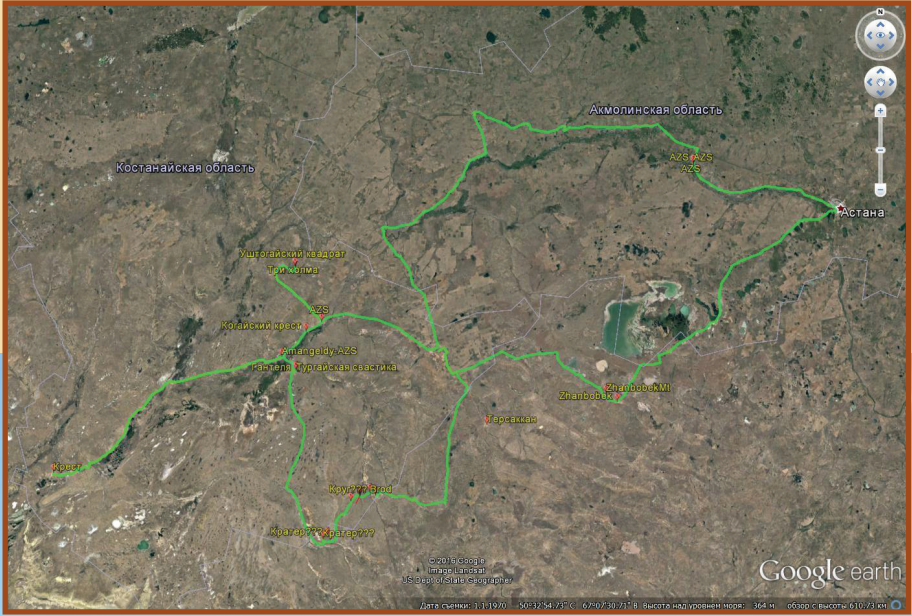
On the way

## Route

The Expedition route followed the trajectory below: Astana - Atbassar - Derzhavinsk - Ushtogai square – Amangeldy – Urpek – Turgai swastika – Meteorite crater in the valley of the Ulken Zhalanshyk river – the Akzhar mountains – Ulytau - Zhezkazgan - Karaganda – Astana.



The expedition team



# DESCRIPTION OF TURGAI GEOGLYPHS

## The Ushtogai Square



This geoglyph is a 229x276 meters rectangle with individual round mounds, each 6-12 meters in diameter and 1 meter in height. Passing through the geoglyph is a field road seemingly dividing it in halves. Evidently, some mounds have been excavated by the robbers. The scanning results showed there were no artifacts found under the mounds.



The Ushtogai Square has been thoroughly studied by the archeologists and the geologist. The photo/video shooting has been made using quadcopter. In addition, the GPS-location of the geoglyph border has been determined.

## The Turgai Swastika Geoglyph

The Turgai Swastika is a mound in the form of the three-beam swastika with a diameter of 104 meters. The average height is 70 centimeters. There are 7 mounds in the form of low mounds of different diameters from 15 to 33 meters to the right of the swastika. To the left, the scattered lines of dumbbell form are located.



# THE COURSE OF THE EXPEDITION



Determination of the GPS location



Establishing the GIS-equipment at the Ushtogai Square



The quadcopter view



Installing a quadcopter



Quadcopter



The georadar survey



Archaeologist Andrei Logvin



Topographical survey and determination of the GPS location



Multifunctional high-precision GPS multsystem / GLONASS receiver



Geological study



A local resident shows an artifact he found on the riverbank about 20 years ago. Presumably, this is the blade bone of a mammoth.



The expedition team by the Ushtogai Swastika



QazaqGeography expedition team



*Photographer  
Dmitriy Popov*





The crater

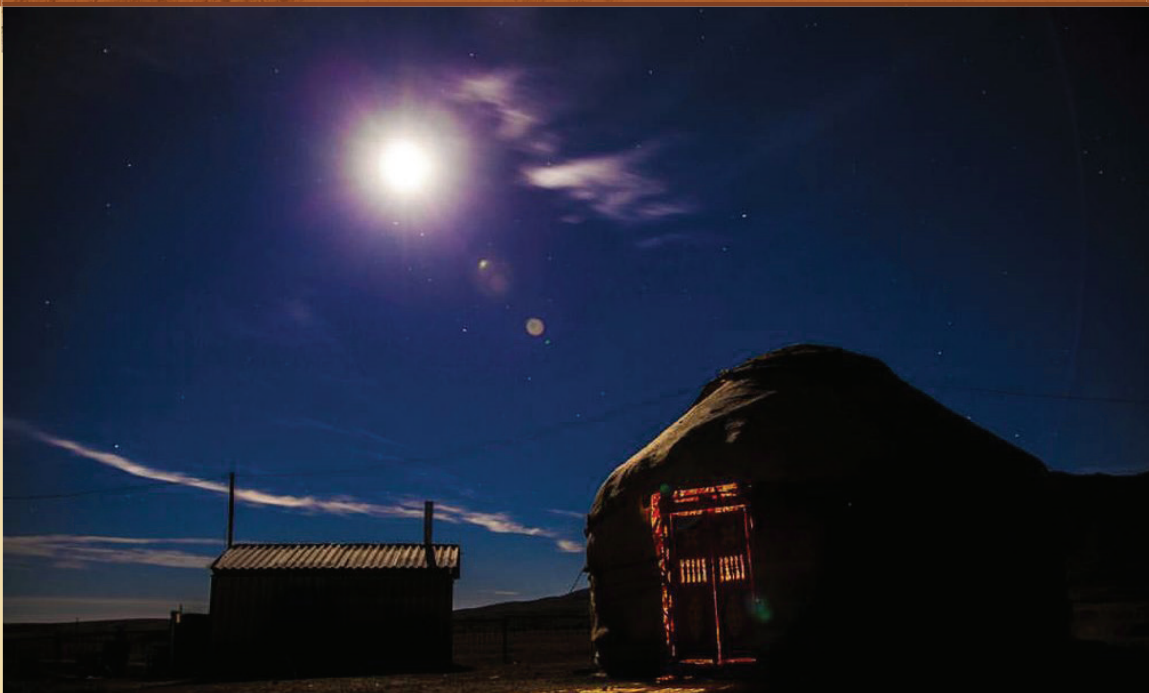


The Akzhar mountains in the Ulytau region

© Zhanat Ait



The expedition team by the Akzhar mountains



Night in Ulytau

Photographer  
Dmitriy Fomenko



The Akzhar mountains in the Ulytau region

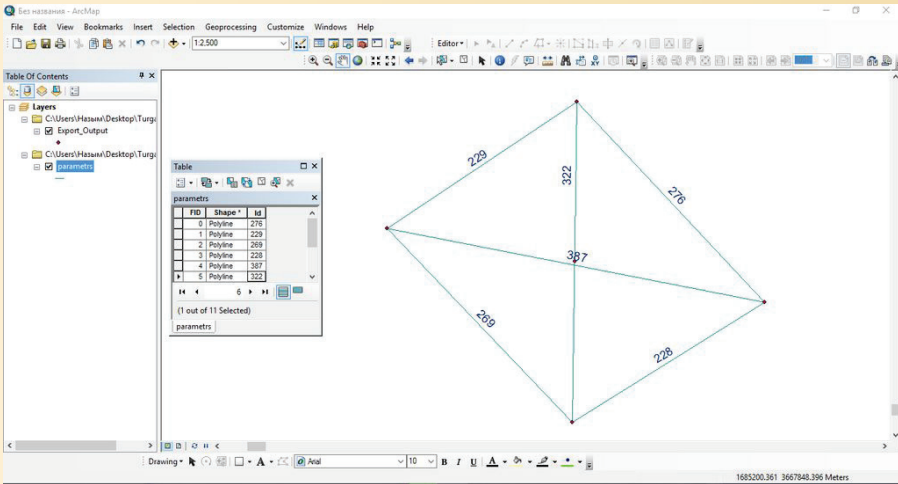


The Akzhar mountains in the Ulytau region

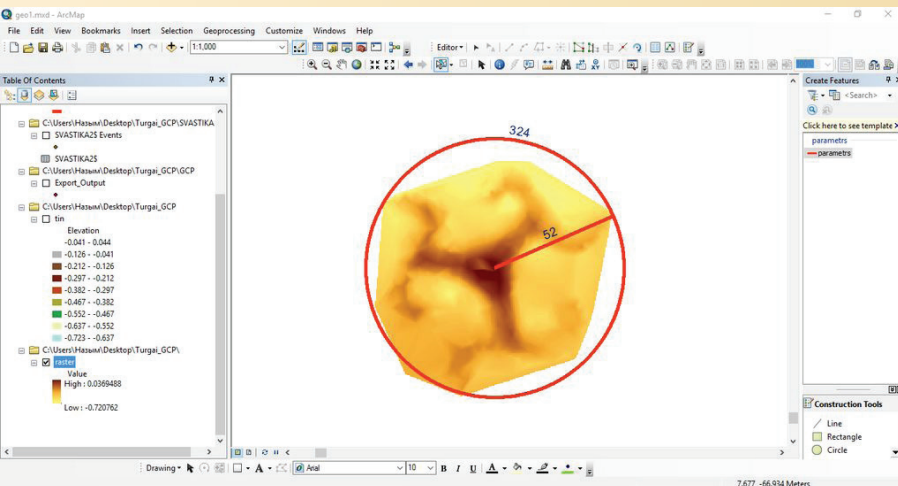


# FINDINGS OF THE EXPEDITION

1. The GIS-experts have identified exact coordinates and dimensions of the Ushtogai Square and Turgai Swastika geoglyphs.



The square's diagonal from west to east is 387 m.  
The square's diagonal from north to south is 322 m.

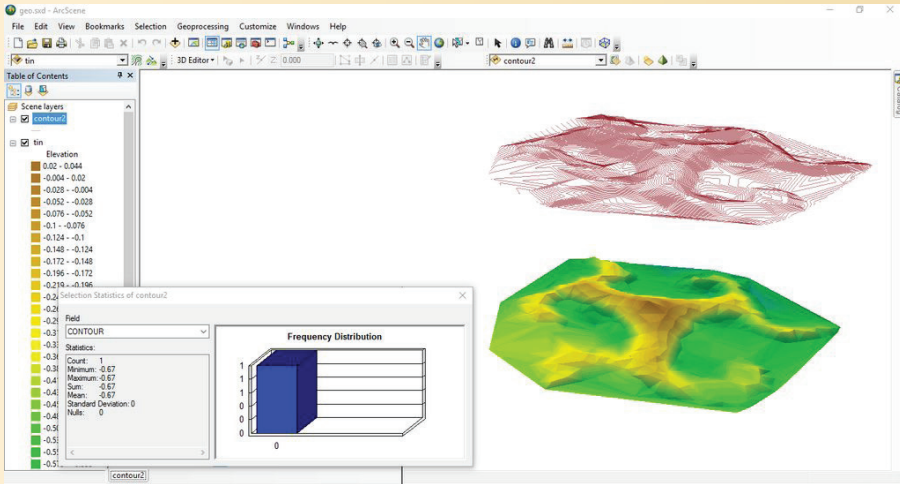


The average height of the swastika is 67cm or 0,67m  
The highest point in the centre is 71 cm.

Number	Title of project	Name of Points	Date	Time	Широта WGS84	Долгота WGS84	Высота	X(M)	Y(M)	Z(M)
1	Square	sq	11.09.2016	16:44	50.500466458N	65.193109735E	170.574	1685066.75357	3667864.05412	4922078.66511
2	Square	sq1	11.09.2017	14:59	50.495848526N	65.193441307E	170.960	1685069.69768	3668025.89572	4921958.36225
3	Square	sq2	11.09.2018	15:34	50.500053314N	65.194389748E	170.960	1684880.55365	3668058.78826	4921998.33156
4	Square	sq3	11.09.2019	15:59	50.495238920N	65.193773131E	170.715	1685071.59194	3668185.58140	4921839.19144
5	Square	sq4	11.09.2020	16:23	50.495238920N	65.192469137E	170.319	1685260.00431	3667984.39987	4921923.53257
6	svastika	sv1	12.09.2016	11:34	50.061059147N	65.213975052E	116.317	1708935.70453	3725943.78777	4870230.47306
7	svastika	sv2	12.09.2017	11:52	50.060995055N	65.214087256E	116.603	1708921.84627	3725967.06008	4870217.99015
8	svastika	sv3	12.09.2018	12:12	50.600905642N	65.214057806E	116.517	1708935.97922	3725983.83552	4870200.20355
9	svastika	sv4	12.09.2019	12:36	50.061026255N	65.214230472E	116.552	1708892.87877	3725972.17356	4870224.13444

Exact coordinates of reference points.

## 2. Development of 3D model for the Turgai swastika geoglyph has started:



3. The tourist potential of the Turgai geoglyphs and the Akzhar mountains has been assessed.

4. Archeological studies of the geoglyphs have been carried out, some with the use of a ground penetrating radar.

5. Geological study of the geoglyphs has been conducted.

6. Photo/video survey of the geoglyphs has been done, some with the use of drones.

# CONCLUSION

of Pleshakov Anatoly Andreyevich, Archeologist,  
Associate Professor of M. Kozybayev North Kazakhstan  
State University  
Candidate of Historical Sciences

Geoglyphs in the south of Kostanay region, Turgai steppe, were explored during the period of September 10- 15, 2016. The survey covered two geoglyphs - the first is the so called Square and the second one is the Swastika - which were discovered by Dmitry Dey, Kostanay archeologist.

The Square is represented by two perpendicular rows of earthen mounds with the diameter of 12- 15 meters and height of 1 meter that form a cross-like structure which is well captured on aerial photos and space images. All earthen mounds are nearly of the same size. There is a rather big mound located in the relative proximity to this structure that preliminary can be referred to the Early Iron Age. The mound has been severely damaged by plundering digs and has not been explored by archeologists. It might have been either a burial site or a sort of a temple complex, therefore dating is relative and is based on exterior view, similar to known and explored monuments. (Der große Kurgan von Baikara. / von Hermann Parzinger, Viktor Zaibert, Anatoli Nagler, Anatoli Plesakov. Deutsches Archäologisches institute. Eurasien-Abteilung. Mainz : von Zabern, 2003 (Archäologie in Eurasien : Bd, 16) 280 Seiten mit 144 Abbildungen, 39 Tafeln und 7 Beilagen.)

Impressive overall dimensions of the Cross boggle the imagination of researchers. According to archeologist A. V. Logvin, earlier he excavated some earthen mounds. As a result of explorations, an artificial mound was recorded without any burial sites and temple complexes. Thus, these mounds are not burial sites and probably they can be referred to ancient ritual structures.

The second structure explored is the Swastika which is a surface structure of continuous mounds represented by lines shaping a solar symbol on the surface in a form of a swastika. As the structure's height is small, it is difficult to see how it looks from the ground, but aerial photos clearly trace outlines of swastika-like structure with impressive dimensions. There is a burial ground close to this structure; almost all earthen mounds are excavated, probably, by plunderers with the use of excavator. But one earthen mound is in a good condition. The diameter of this earthen mound is 15 – 18 meters, the height is about 50 cm. A ditch with two opposite breaks (passages) is clearly seen around the mound. The exterior view of the burial site can be compared with known mounds in the North Kazakhstan and South Urals dated back to the Early Bronze Age and referred to the Petrovsky or the Sintashta culture.

Such mounds represent burial grounds of charioteers accompanied by discoveries of chariots with horses. (Excavations by G.B. Zdanovich).

Dating of these monuments is a challenging task. Since no artifacts were discovered during exploration of geoglyphs by Logvin A.V., the period of these structures can only be assumed. Logvin A.V. does not suggest any certain idea, though he assumes these monuments are referred to the Early Iron Age. I tend to assume that these sites can be dated to the Early Bronze Age, as judged by the burial site located close to Swastika. Moreover, everything suggests that it is ancient Aryans of the Early Bronze Age who worshiped sun and fire. We find solar signs in the swastika form on the houseware of the time, we know massive structures in the form of proto-cities like Arkaim, etc. that impress by their structural and architectural constructions. It seems that during exactly this period population of Ural-Irtysh Basin especially worshiped all sorts of cults related to the sun and space, as evidenced by the explorations of Ural archeologists.

At least, this is my preliminary opinion.

In general, this expedition left lasting impressions. There was a good team of experts and just interesting people with profound interests and knowledge.

Secondly, it was my second time in the steppes of Turgai Trough. First, I had a chance to work within the program of Northern rivers transfer to the Aral sea in 1976. And exactly forty years later, thanks to the Geographic Society, I came back to these amazing places and noted big changes, unfortunately, changes for the worse. Forty years ago, we saw small auls on the way with kind and welcoming people, now they turned into ghost wrecks of townships. Before we were accompanied by huge saiga herds, during this trip we have seen only 4 animals. Marmots as yellow columns were seen everywhere in the steppe, this year I have not seen any of these wonderful large rodents. If before all rising stone structures were crowned by the large birds of prey, now we have seen only 2 bustards and flocks of some small birds.

In general, the impression is that some environmental disaster approaches Kazakh steppe and these fascinating regions are transforming into dead space.

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# CONCLUSION

of Andrey Logvin, Archeologist,  
Head of the Archeological Laboratory of the  
Baytursynov KSU and Seitov A.M., Inspector on the  
Protection and Use of Historical and Cultural Heritage

The geoglyphs were discovered in 2006 by Dmitriy Dey during the review of freely available space images of our planet's surface. The Ushtogai Square was the first identified site that gave a start to the study of the Turgai geoglyphs in 2007.

It should be noted that the term "geoglyph" is conditional with regard to considered sites and reflects formal side rather than the content of the cultural component.

So far, there is information available on 80 geoglyphs of this type on the territory of the Turgai Trough, 45 of them were explored with sites description, photo records, development of layout, site plan, etc. available.

Sites referred to as the Turgai geoglyphs differ in terms of construction method. Most of them represent geometrical figures (square, crosses, rings, and lines) composed of separate rounded mounds with the diameter of 6-12 m. The approximate time of two sites construction was determined with the use of natural science methods – 9th–8th century B.C.

The Turgai swastika, a geoglyph constructed of earthwork, stands distinctive. It is a part of the Urpek ritual complex and besides the swastika includes earthen mounds and "dump bells". Based on known archeological explorations of "dump bells", we assume that this ritual complex should be referred to the late Hun-Sarmatian period.

Works on geoglyphs exploration are carried out in recent years within the framework of grant № 2409/ГФ 4 of the Ministry of Education and Science of the Republic of Kazakhstan.

During the expedition organized in 2016 by Kazakhstan National Geographic Society, works with ground penetrating radar were performed in the Urpek ritual complex close to the Turgai Swastika in order to detect new sites on the territory of the monument. Captured data is being deciphered now.

Paper work is currently underway in order to register with the authorities on state protection of historical and cultural heritage. According to Article 5 of the Law of the Republic of Kazakhstan of July 2, 1992 "On the protection and use of historical and cultural heritage sites", the Turgai Swastika Geoglyph archeological site has gained a status of historical and cultural monument since its detection and is subject to protection along with historical and cultural monuments. It is located 15 km south-east of Amangeldy township, 0.7 km south-east of Agashtykol township of Amangeldy district of Kostanay region (GPS coordinates of the monument: 52° 26' 28,0" N; 62° 38' 11,4" E).

# CONCLUSION

of Lepikhina D.I., Hydrogeologist,  
Member of the Pavlodar Geography House

## Brief information on the Turgai Trough (valley):

The Turgai valley (Turgai Trough) is an erosion-tectonic trough in the north-west of Kazakhstan, between the Urals and Mugodzhzar Hills in the west and the Kazakh Hummocks in the east. There are dry steppes in the north (the area of virgin and fallow land development) and Barsuki Bolshiye and Malyye semi-deserts and deserts in the south.

The Turgai Trough is a large erosion-tectonic depression with the length of several hundred kilometers. The width of the Turgai Trough varies from 25 to 70 km. In geostructural terms, province corresponds to Turgai epi-Hercynian trough.

Platform cover of Turgai Trough is built of continental and marine sediments from the Triassic to the Neogene and the Pleistocene.

Sedimentation and relief formation in this area are closely linked with the events of the Glacial period in the northern part of West Siberia.

The road runs across a deserted steppe valley of the Pliocene-quaternary deposits. The landscape of the steppe is not diverse: sagebrush, some feather grass, foxtail, tumble-weed, and leban.

## Site No. 1 The Ushtogai Square

We found a place for encamp, set up a camp and went to the object. If the exact location of the square is not known, one can pass it by and no forces, mythical or magic, will stop, even intuition will not help.

Our guides Andrey and Abay have been in this area several times, and together with foreign specialists they have explored, filmed, and conducted preliminary survey of the site.

When looking at steppe, one sees steppe with small hills covered with fescue-feather grass, there is a rosehip and licorice; all sorts of solonetz and steppe vegetation are widely spread: fescue-sagebrush and saltwort-sagebrush of hydromorphic origin and linked with shallow salty groundwater.

Study has revealed that:

- The square is composed of small earthen mounds in the amount of 101 (odd number).

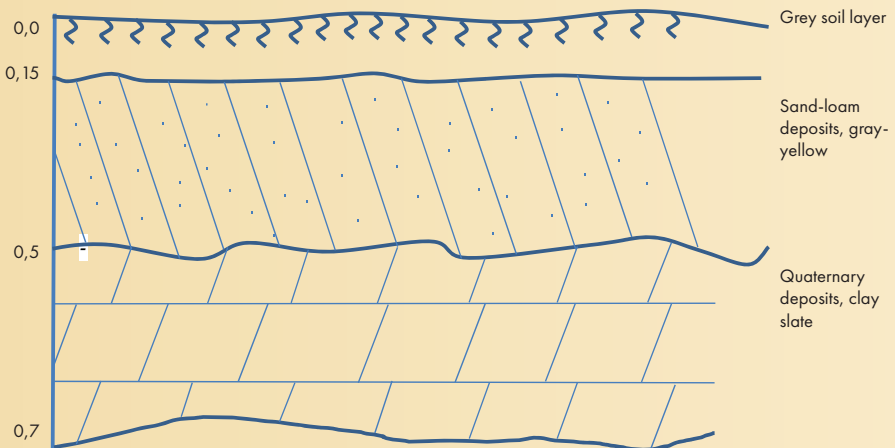
- Earthen mounds are equidistant.
- Square lines are relatively even.
- The height of earthen mounds is from 10 to 70 cm.
- Angle of slope is from 5 to 10 .
- The length of one side of the square is approximately 287 meters (given that average step is 60 cm, 479 steps in total, multiplying  $479 \times 0.60$ ).
- The diameter of mounds varies from 24 to 30 meters.

What we see now doesn't mean that these mounds were initially rounded, they might have been square. Such factors like time, temperature, water, wind, and sun should not be excluded.

-When we are on the site, due to the dimensions, we cannot determine that it is a square with diagonals, this square has 2 diagonals that even visually are exactly straight.

- Stratigraphic column of the soil can be done based on the hole (excavation) found at one of the mounds:

### Stratigraphic column of the Ushtogai Square hole



During the study of soil around the earthen mounds, it appeared that earthen mound and soil around it are of homogeneous constitution, i.e. earthen mounds were from the local soil.

Pyritized sandstone was found at the center of the Ushtogai Square.

Abay Seitov says that 50 objects are similar to the Ushtogai Square that are also composed of knobby mounds, mainly these are geometrical line, one square, 4 crosses, 30 lines and also circles. All these geometric figures have odd number of earthen mounds from 5 to 101. 17 objects have been explored.

An expedition to the Turgai region with Senior Archeologist of the region Andrey Loginov has been organized. Archaeological works have shown that these are not interments and burial mounds; no household items and utensils have been discovered. Archeologists have conducted analysis and suggested that the geoglyphs are around 3-4 thousand years old and may be even more.

Geodesy and topography experts have carried out a topographic survey with GPS coordinates of the site.

Also the site was surveyed in a good quality with a use of drones.

An interesting phenomenon has been observed along the Ushtogai Square – the Turgay Swastika route – desertification of the steppe, blown sands (dry steppe area).

## Site No. 2 The Turgay Swastika

The Turgai Swastika (triskele) is located 700-800 meters away from Agashtykol aul.



Triskeles symbolize wheel turn and three main sun phases– sunrise, zenith, and sunset.

The Turgai Swastika is a geoglyph, ancient earth mound, mound in the form of a three-beam swastika. The mound stands out among all geoglyphs for its picture and structure. The mound has equaled with the ground to such extent that upon closer examination it looks like a natural hill.

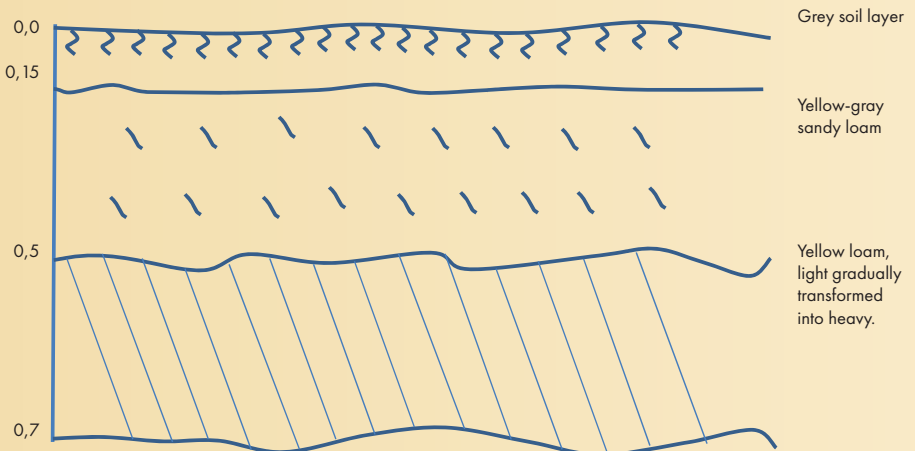
These three beams form the swastika itself (perhaps three swastikas?) that are linked by the cross. Interestingly, there is no vegetation on these beams ended with circles. Soil of three beams is similar; it is sandy loam, light yellow loam with high content of quartz and basalt in the form of coarse-grained sand.

Solonetz-steppe vegetation is observed near the beams. There are tree-like succulent plants, licorice, and fescue-sagebrush beyond the swastika. There are many badger setts, holes of field mouse and various spiders.

Township population arranged an animal burial site in close proximity to the swastika.

Petrovsky period and dump-bell earthen mounds are seen on the south-east side. One of the mounds has been excavated to the depth of 2.5 m, which can be used for stratigraphic column:

### Stratigraphic column of the Turgai Swastika hole

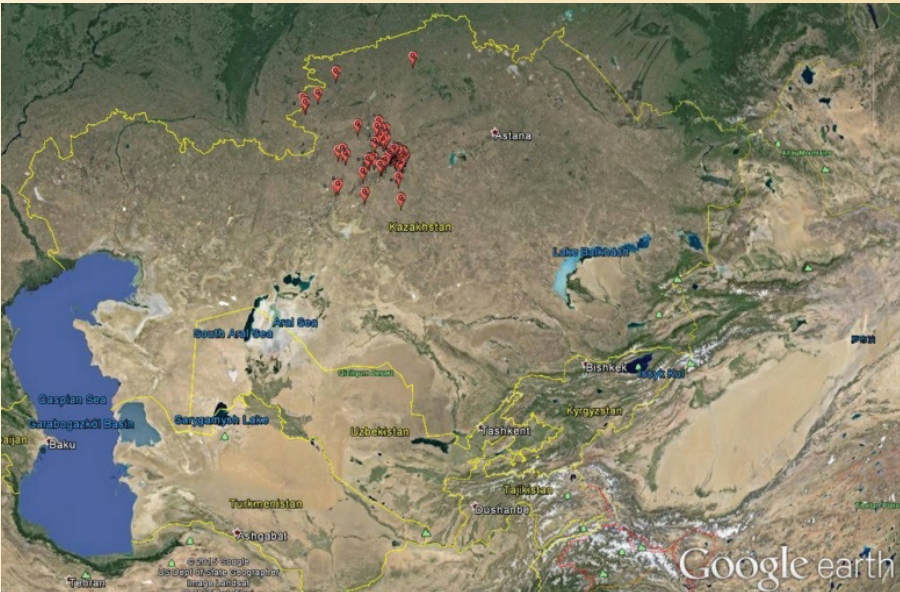


Dump-bell mound. When looking straight at the mound, it becomes obvious that mound saddle is twisted and is relatively lower than earthen mounds. The angle of slope is 10°. The mound is stretched out from south-east to north-west. The south-eastern side of the mound is excavated, so the soil composition can be seen – sandy-loam, light yellow loam. The length of each mound is 10 meters.

The Petrovsky period mound of rounded shape with the diameter of 12-14 meters. There are two ditches around the mound. According to A. A. Pleshakov, an archeologist, if the upper layer is uncovered (removed), a footworn layer of clay can be found with the hearth on it and the most ancient chariots with two horses. This burial mound is around 4000 years old. Small holes can be observed on the mound itself. Soggy, i.e. grave, ground attracts small animals that turn their focus to burial mound.

A patelliform depression of salt lake is observed to the south of the swastika, several hundred meters away. Hydromorphic landscapes represented by solonetz and saline complexes, meadows, and parts of steppe formations of rush, sedge, and sagebrush, have formed due to close to surface groundwater mineralized to a different extent.

On the first day, when we were standing on the Swastika, local people approached us saying that they had a very interesting discovery. They showed a baby mammoth shoulder bone that was retrieved from the collapsed dam on Sary-Turgai (yellow bird) river.





One more intriguing question is a geographic one. For example, for some reason, all the geoglyphs are concentrated in one place in Kostanai region. To be more precise, on the territory of the Turgai Trough or in the Torgai river valley. Steppe is stretched further, but no similar figures are seen again.

13.09.2016. Turgai

Further the journey went through Rakhmet abandoned township, where a short stopover was done. Steppe desertification signs – shrub vegetation, saltwort, saxaul vegetation could be observed again.



A camp was set at the drying river on Karaganda lands.

14.09.2016

Expedition decamped and headed for the crater of either volcanic or meteorite origin. It strayed a long, being unable to identify the direction. Visually, the crater is a cup-like hollow in the low-

hill terrain. Vegetation is diverse, including dwarf acacia, cow-parsnip, rock-lily, feather grass, tulips, and sagebrush. The Paleozoic deposits have the form of bright-yellow and orange expanded clay.

Then, we headed for the site – the Akzhar mountains. The steppe is beautiful, white, and silky thanks to feather grass, further, closer to the mountains, the terrain is traversed by many rivulets, spiffy emerald necklace of which decorate

the steppe. The Akzhar mountains and ford are ahead. Riverside is scarred with ravines and is steep. Flood plain is wide and willowy. We found a crossing place, safely forded, and headed for the mountains.

The collection of minerals and rocks of the Pavlodar Geography House has been enriched with 20 samples.

The Turgai Geoglyphs are the most important discovery of independent Kazakhstan. The task of Kazakhstani science is to determine the next steps for the study of each geoglyph and systematization of available materials for full-fledged and comprehensive scientific research.