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Astronomical Context of Georgian Folklore

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Abstract

Objectives: The religious Ancient megalithic monuments are accordingly o/riente to the ancient Gods – The Sun, Moon, luminaries. The aim of this work to research the ethnographic data, current folklore and based on the results, harmonize the ancient Gods and the orientations of the religious megalithic complexes. **Methods/Statistical Analysis:** We harmonized the ethnographical, folklore and historical information and restoration of ancient celestial sphere (using special astronomy application) and identified the correlations between the some acronychal or helical rising/set of luminaries and orientations of megalithic objects. Such connections are stored in a folklore. **Findings:** This technique of investigations gives us more clear understanding of ancient universe. Using this method, we can receive additional information about the ancient Gods – Luminaries, clarify current mythology, date the megalithic complex. **Application/Improvements:** This method of investigation - Harmonization cultural astronomy and archae or astronomy with the archeological investigations will be more fruitful, because it gives us reliable information concerning the ancient culture, ancient religion and ancient people.

Keywords: Ancient Astronomy, Ethnographic Data, Folklore, Megalithic Monuments

1. Introduction

In central Georgia, south of the Trialeti ridge and bordering the Algeti river lies the borough of Manglisi. Historically Manglisi also known as Manglisi gorge was bordered on the east with Didgori Field and Bender-Bendeni side-hill; bordered on the west by Arjevani - Kadkaia-kachai mountain ridge and the mountain of Sakrisi; bordered to the south by the Ridge of Bedeni Mountain; and bordered to the north by Didgori ridge. Russian speaker inhabitants of this territory call the mountain of Sakrisi “Yellow Mountain” or “bear beam”.

In the mountain of the Sakrisi (bear beam) is located the megalithic complex of Gokhnari. Regarding the Gokhnari megalithic complex, Meliksed Beg mentions¹ that the crystal castle mentioned in the famous Georgian myth about Amirani, suggests that it is the megalithic complex of Gokhnari, where Amirani found the entrance of the crystal castle by following the direction of a Sun beam(Figure 1).



Figure 1. The South part of Georgia (Kvemo Kartli), near the Manglisi is located megalithic complex of Gokhnari. From (Melashvili 2016)

Concerning the archeological issues, well known “international style”² epoch in 2000 BC was wide spread in the south Caucasia. On the archeological sites of south Caucasus were discovered cylinder seals of both styles, Elaborate and common styles of Mitanian

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glyphic. Today we can find about twenty seal of Mitanian styles in Caucasus. Most seals are common styles. Such seals are found in Trialeti, on Sapar-kharaba graveyard were discovered nine cylinder seals, seven of them have geometrical ornament³. In the scientific literature many times was mentioned about the typological and functional similarity between south Caucasian (II BC) and Anatolian standards (III BC) discovered in the barriers of the kings. All this aspect indicates, in ancient epoch habitants of this territory where well developed and had cultural-economical-religious relationship with Egyptian, Mesopotamian and Mitanian civilization.

2. Ethnographical and Cultural Data and their Correlation with Celestial Bodies

There is a question about whether the beliefs of ancient humans were based on respect for mystical, spiritual and unknown astronomical and weather phenomena or whether they worshiped the life-giving powers of these, which they used in their daily life and practical activities. The movement of the Sun, the phases of the Moon, the appearance of twinkling stars, these must have been obscure, mystical, and beyond comprehension for ancient people; therefore, they venerated, deified and worshiped the luminaries.

The mythological aspect of the menhir (located in the "Pativan valley", South of Georgia) is directly related to dry and rainy seasons according to the ethnographic records⁴. The megalith monuments – the menhirs were related to the local religion and this is supported by the mentioning of the menhirs as "Maryam's Cross"⁵, as well as the fact of carving the cross on the megalithic monument – the menhir on Tejisi Mountain. Vakhushti Batonishvili wrote the following about the Pativani-Vake boulder: "There is the boulder just below Pativani, if you turn it over during drought and wet it, rain will come, and if you throw ashes and turn it over during rainy weather, there will be drought", it should be mentioned here, that in general that menhirs are often referred to as "stone-women", characterized with such features – in the towns of Manglisi, Gurjaani and so on. menhirs, the religious-ritualistic monuments, are all given the same properties in terms of rain and drought. People of the megalithic era gave certain mystical supernatural power to this god symbol. It is very interesting fact by the view of archeo astronomy,

that such megalithic religious-ritualistic elements, such as "Stone-woman" or menhir is associated with natural, climate occurrences, one side of it provokes rain and another – drought. This is reflective of a worldview in which local technology or tools can be used to influence the sky, in this case, to effect the amount of rain. The "Stone-woman" menhirs were perceived to influence the periods of droughts and rains that are directly related to specific locations of the sun in the sky and exactly for that reason, the religious-ritualistic megalithic buildings were built. We hypothesize that people worshiping the menhirs started from this, it was a marker for commencement of agricultural works, watering, harvesting and performance of the agricultural activities, which indicates the cognition of the universe and knowledge of the astronomical occurrences by humans of the megalithic period.

Ancient humans observed and studied celestial bodies (which were perceived to be Gods) and used that knowledge in his daily life for his benefit. In our opinion, this is one of the reasons for the worship and admiration of celestial bodies. A contemporary example illustrative of this fact is the materials from the archive of S. Bedukadze⁶, in which a ploughman yokes oxen after the appearance of the specific star - "Sapara's Chuti". Ploughman's songs during the cultivation of the soil (during ploughing), in which the Sun and Moon are mentioned, also deserves attention.

"We used to say that "Sapara's Chuti" appears at dawn, the star is like "Chuti" and "Sapara's Chuti" is Tatar, the Georgians gave it such name, it was an ordinary "Chuti", they had one and they started to joke that it looked like it, that "Chuti" also had oxen yoked, a ploughman ran after it, a dinner-man used to come, a frisky dog (small) followed him, a wolf ran after them - small"⁶.

"We used to yoke oxen at night - it was fresh, you need not get angry with the ox, it goes for himself, but as its get hotter, the cattle becomes lazier. We yoked at the beacon star and let them free by noon"⁶.

"A good singer did not have to do anything (plough), he used to cheer us up, even a ploughman sang if he knew a song, sometimes I had the drovers, they started singing out loudly such a song as "Orovela", or some other about oxen or other things; some of them sang like this:

"The bright moon said
I am much better than the sun.
Sat and wrote the book.
The wind was carrying away ..."⁶

As the records above show, the ploughman's song is

about the Moon, the Sun and the wind; before yoking the oxen he looks at the beacon star and only then he starts yoking them. These materials reveal that the people used to manage their agriculture through observations on celestial bodies. This shows that they possessed certain astronomical knowledge about celestial bodies and their motion, as well as land farming culture and rules passed from generation to generation with their accumulated knowledge. In our opinion, ancient cultic megaliths were created for the purpose of the seasonal breakdown of the year for the ancient people to know when they could plough and sow, when the cold and hot weather started, whether it was rainy or dry season. In essence, the megaliths encode information necessary for survival.

3. Field Work Methodology

In the field we marked the used following tools:

1. Optical theodolite (T15, N25773, 1976), the precision of this Theodolite is 10”
2. Optical-magnetic compass (Military Prismatic Sighting Compass w/ Pouch)
3. 50 m distance measuring device
4. Camera (Sony, a200)
5. GPS (Garmin, model: 010-01199-10)
6. Electronic Watch

During field work we identified possible observation platforms - circular and semicircular objects, they are marked with Latin Characters A, B, C, D, the monoliths with Arabic numbers 1, 2, 3, 4 and the rectangular form rooms with Roman Characters I, II, III, IV, V Next, we used line-of-sights from those platforms (Objects A, B, C, D) incorporating the monoliths (1,2,3,4) as possible observations of the sky that ancient people did for agricultural and religious purposes. Then we restored ancient celestial sphere using SkyMap Pro⁷ and found which celestial bodies correlated to the line-of-sights of the megalithic complex.

4. Megalithic Complex of Gokhnari

On the way to the Gokhnari megalithic complex lies the Church of Mariam's Cross or Mariam-Jvari in Georgian. In the yard of the church there is a fallen menhir. It is engraved with a circular petroglyph that looks like the Sun or Moon. If we re-erect the menhir in the upright

position, the petroglyph will be facing approximately the summer solstice. (Figure. 2)



Figure 2. The menhir in the yard of the Mariam's Cross church, near the Gokhnari complex, 2013. Photo by Badri Jijelava.

The Megalithic complex of Gokhnari comprise two parts upper part, which is located to the west direction and downer part, located to the east part of the complex. In the book “Georgian megalithic culture” is mentioned upper part as “fortress” and downer as “Former city”¹.

The orientation of this complex is approximately from North to South. There are four huge natural monoliths within the complex.

Monolith 1 is divided for four stone parts, one of them is located behind the other three and is not visible from the entrance; thus, it looks like a three - column monolith to those who are inside.

Monolith 2 and Monolith 3 are very close to each other and they can be seen from any part of the complex.

Monolith 4 is located south-east of the “fortress”. East of Monolith 4 is built a corridor with entrance of architrave. In the corridor of this entrance, one can find two dolmens connected to each other by dugouts, which go deeper into the ground. One more dolmen is built to the north of this entrance.

The main entrance to the complex faces north-west and its azimuth is 302° True. At the north wall of the “fortress” is built a dolmen The roof of the dolmen is ruined and instead of the original roof local shepherds made a tiled one. We determined the azimuth of the direction of the dolmen and it equals 360° True. From

Table 1. Modeling with Sky Map Pro software. The comparison of the results of the fieldwork and the modeling

Number	Direction of Objects	Astronomical phenomena, luminaries	Azimuth	Altitude
Summer solstice - 25 July 4000 BC				
1	D object - 2-3 monoliths	Rise of the Planet Venus, Summer solstice - 25 July 4000 BC	Modeling A 82° 28' 35" Field work A 82° 46'	Modeling H 13° 10' 41" Field work H 13° 30'
2	C Object -2-3 monoliths	Heliacal rise of Alpha Leo.	Modeling A 65° 35' 33" Field work A 65° 18,3'	Modeling H 7° 5' 12" Field work H 7° 16'
3	C Object -2-3 monoliths	Rise of the planet Jupiter - summer solstice - 25 July, 4000 BC (first appearance, based on the configuration of megalithic complex)	Modeling A 63° 58' 5" Field work A 65° 18,3'	Modeling H 7° 10' 29" Field work H 7° 16'
4	B object - 1 monolith	Rise of the planet Mercury - summer solstice - 25 July, 4000 BC (first appearance, based on the configuration of megalithic complex)	Modeling A 58° 37' 38" Field work A 57° 35'	Modeling H 3° 17' 24" Field work H 3° 08'
5	a) Direction at the entrance located dolmen; b) Direction of "fortress";	Culmination near horizon of Arcturus (Alpha Bootes) (visual magnitude - 0.05)	Modeling A 0° 25' 34" A 4° 36' 49" a) Field work A 0° b) Field work A 6°	Modeling H 8° 8' 10" H 8° 8' 10" a) Field work H 8° 02' b) Field work H 8° 02'
6	B Object -1 monolith	The Sunrise - summer solstice - 25 July, 4000 BC	Modeling A 58° 27' 25" Field work A 57° 35'	Modeling H 3° 3' 19" Field work H 3° 08'
7	Marim's Cross Church	Direction of the fallen Menhir	A 71°	H 2°
Vernal equinox - 22 April, 4000 BC				
8	A Object -2-3 monoliths	Heliacal rise Elnath (Beta Tauri), vernal equinox 22 April 4000 BC	Modeling A 86° 49' 29" Field work A 88° 06'	Modeling H 3° 14' 56" Field work H 2° 19'
9	B Object -2-3 monoliths	Rise of Haedus (Zeta Aurigae) (first appearance, based on the configuration of megalithic complex)	Modeling A 72° 35' 12" Field work A 73° 19'	Modeling H 3° 33' 45" Field work H 3° 25'
11	Architrave entrance direction, on the continuing of the monolith 4	The Sunrise, Vernal equinox - 22 April, 4000 BC	Modeling A 92° 38' 13" Field work A 94°	Modeling H 2° 37' 47" Field work H 2°
Autumnal equinox 22 October, 4000 BC				
12	Architrave entrance direction, on the continuing of the monolith 4	The Sunrise, Autumnal equinox 22 October, 4000 BC	Modeling A 92° 38' 13" Field work A 94°	Modeling H 2° 37' 47" Field work H 2°
Winter solstice - 19 January, 4000 BC				
13	B object -1 monolith	Heliacal rise of Shedar (Alpha Cassiopeia).	Modeling A 58° 10' 53" Field work A 57° 35'	Modeling H 7° 21' 16" Field work H 30 08'
14	D object -4 monolith	Acronychal Set of Rigil Kent (Alpha Centauri). (The first disappearance to the horizon, based on the configuration of megalithic complex.)	Modeling A 219° 24' 4" Field work A 221° 48'	Modeling H 3° 26' 45" Field work H 3 25'

this, the position the altitude of the landscape horizon is seen at an angle of 8° (Figure 3).

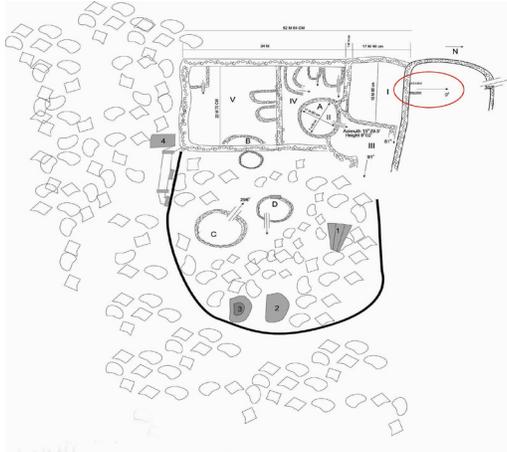


Figure 3. Megalithic complex of “Gokhnari”, 2013. The map is made by Badri Jijelava.

At the rock which is located to the north of the megalithic complex a spring emerges to the surface and flows to approach the Gokhnari complex. Then it turns to the west and continues its way south of a “carcnally” (“Carcnally” means “a place with many stones” in Georgian). As it continues the spring-fed stream disappears under the ground to again become visible later on. The general direction of the “fortress” is North-South, more exactly: NE-SW - 6° - 186° True geodesic azimuth. During field work, we measured the coordinates of the first (I) room, which is located in the north part of the complex.

Latitude: $44^{\circ}17' 54,054''$ N

Longitude: $41^{\circ} 40' 27,546''$ E

5. The Results of the Celestial Sphere Modeling and Field Work.

We conducted the modeling of the celestial sphere of the Gokhnari megalithic complex using the software SkyMap Pro⁷. As seen in Table 1, in 4000 BC in the Gokhnari megalithic complex heliacal risings of celestial bodies would occur in the astronomically significant periods (winter and summer solstices, and vernal and autumnal equinoxes) and was correlated with the configuration of the complex. (Table 1)

We have identified 14 possible celestial alignments for the Gokhnari complex. Based on the modeling of the celestial sphere, the dolmen located in the north part is directed towards Arcturus in the summer solstice (Table 1, row 6). This will be discussed in detail in the following sections.

6. Cultural - astronomical destination of Gokhnari megalithic complex

John Rogers in his article “Origins of the ancient constellations” describes the mythology relating to the Bootes constellation. “It follows Ursa Major in the sky, and has always been associated with it, as a hunter of the bear, a guardian of the bears, a herdsman of the oxen, a driver of the wagon, or a ploughman with plough. Bootes probably means Ox-driver”⁸⁻¹¹;

“In Mesopotamia this area, or especially Arcturus, was somehow identified with the god Enlil; but there was an alternative name Shudun, meaning Yoke, which perhaps suggests that association with oxen did reach Mesopotamia”^{8,9}.

In the *Almagest* of Ptolemy¹², the Alpha star (Arcturus) in Bootes is mentioned as “Subrufa”, it means - slightly red¹³. On the celestial sphere, between the constellations Bootes and Ursa Major is located the Canum Venaticorum (hunting dogs). According to Ptolemy’s *Almagest*, Canum Venaticorum translates to “dogs” constellation. It includes two stars: Cor caroli – Alpha 2 (Visual magnitude 2.84) and Chara (Visual magnitude 4.24).

The Constellation of Bootes is also mentioned in Homer’s epic poem the *Odyssey*. Odysseus navigates away from Calypso by the Stars.

“...nor did sleep ever descend on his eyelids

As he kept his eye on the Pleiades and late-setting Boötes

And the Bear, to whom men also give the name of the Wagon,

Who turns about in a fixed place and looks at Orion...”¹⁴

According to the Greek mythology, Bootes is associated with a ploughman with 7 yoked oxen (the stars of the Ursa Major).

The above-mentioned historical data indicate that

luminaries had a significant place and role in ancient epochs. They contained not only mythological and religious aspects, but were of vital importance for maritime and agriculture.

The ethnographical data collected by S. Bedukadze in which yoking of the oxen is described are similar to Sumerian, Egyptian and Greek mythologies⁸;

Going back to this ethnographic data:

“We used to say that “Sapara’s Chuti” appears at dawn, the star is like “Chuti” and “Sapara’s Chuti” is Tatar, the Georgians gave it such name, it was an ordinary “Chuti”, they had one and they started to joke that it looked like it, that “Chuti” also had oxen yoked, a ploughman ran after it, a dinner-man used to come, a frisky dog (small) followed him, a wolf ran after them – small”⁶.

Presumably, the source of the explanation of “Sapara’s Chuti” comes from Ptolemy’s definition of Arcturus (“Subrufa”), “Chuti” may be from Sumerian “Shup.pa”. In ancient folklore, these two definitions transformed into “Sapara’s Chuti” and passed down today as “Sapara’s Chuti” star.

Hypothetically in the ethnographic data obtained from the ploughman, the star of “Sapara’s Chuti” implies the star Arcturus, whose visual magnitude equals 0.05. It is bright enough to be seen with the naked eye and presumably was the marker of the beginning of the agricultural works. Based on the ethnographic data, when “Sapara’s Chuti” was observed on the celestial sphere, the ploughman began yoking his oxen. According to the Sumerian and Greek mythology “yoked oxen” were associated with the seven stars of the Ursa Majoris constellation, and the ploughman was the symbol of the constellation of Bootes. “A frisky dog (small) followed him, a wolf ran after them (Bedukadze 1964)” - these are the stars in the Canum Venaticorum (Hunting dogs) constellation, Beta - Chara (visual magnitude 4.24) is the symbol of “a frisky dog - small”, the brighter Alpha star - Cor caroli (visual magnitude 2.84) is the symbol of a wolf, mentioned in the ethnographic data.

“We used to yoke oxen at night, it was fresh, you need not get angry with the ox, it goes for himself, but at its get hotter, the cattle become lazier. We yoked at “beacon star” and let them free by noon”⁶.

As seen from the data given by the ploughman, it (“to yoke oxen”) happened at night, when the “beacon-star” was seen at the horizon. The modeling with the use of the Sky Map Pro shows that in antiquity, Arcturus (Alpha Bootes) was a circumpolar star.

Based on the results of the modeling in 4000 BC, Arcturus “culminated below the pole”(USNO 2016), skimming near the horizon before the rising of the sun. Note that culmination is used in the astronomical sense “(astronomy) the highest or lowest altitude attained by a heavenly body as it crosses the meridian”¹⁵. This astronomical phenomenon could be observed from the northern dolmen. After the lower culmination, the star started moving to the zenith of the celestial sphere increasing in altitude (in a horizontal coordinate system). Hypothetically, ancient people noticed such kind of motion and the bright light from the star (low visual magnitude) during the time of the year for ploughing. They discovered that the appearance of Arcturus at that time of year was very soon followed by the dawn. Owing to these three factors the ancient people began to deify the star along with putting their knowledge to good use. The dolmen, built in the north part of the megalithic complex, has an orientation to Arcturus.

Equating of “Sapara’s Chuti” with Arcturus gives us an assumption that in different ethnographical data the worshiped “Beacon star” is Arcturus (Alpha Bootes). The culmination of the star near the horizon meant that the dawn would break soon and the ploughmen began to yoke the oxen.

The ethnographic data collected by S. Bedukadze describes a part of the ancient celestial sphere, the knowledge which had the plowman about the star “saparas chuti” was unknown to him; when he wrote about the plowing process, he had not understood at that time that he had been describing the celestial sphere and constellations. Based on the results of modeling Skymap Pro only in 4000 BC did Arcturus become circumpolar star and appeared in sky, skimming near the horizon before helical rise of the planet Venus and the Sun rise in the summer solstice period. Such astronomical phenomena is correlated with the ethnographic data collected in the classical period (ethnographic data about beacon star and plowman). In spite of the fact that these ethnographic data was not collected in the classical period, presumably such folklore comes from the prehistory period as do many story and legends of Georgia, legend about Elia, Christ and Saint Giorgi, story about Amirani and so on. The above-mentioned folklore describes a part of the ancient celestial sphere, more precisely, the Bootes (ploughman), Ursa Majoris (Yoked oxen) and Canum Venaticorum (dogs, which in prehistoric Caucasian epistemology were dog and wolf) constellations and their location in the

celestial sphere.

“Dawn was dragging and dragging together with his skin, he (dawn star) rises at the daybreak, was kicked and driven out,

“Beacon star” came, he was made drunk, dressing gown was changed, and chokha (Georgian national suit) put on”¹⁶.

As seen from the V. Koketishvili ethnographic data the Beacon-star and the Dawn-star are different stars. This fact is a compelling argument in support of our assertion of the identity of Arcturus star as the Beacon-star (as are mentioned in many Georgian ethnographic data).

In the Gokhnari Megalithic complex in 4000 BC on the summer solstice there was a heliacal rising of the planet Venus, which rose after the culmination of Arcturus star near the horizon. The planet Venus is mentioned in the ancient ethnographic data as “Aspirozi – Greek name”, “Mtiebi”, “Khariparia - oxen stealer”, “Tciskris maskvlavi - dawn star”, “Mtsukhris maskvlavi-twilight star”¹⁷. The folklore passed through the generations is the evidence that the planet Venus influenced the religious and cultural aspects of the life of prehistoric people of Georgia.

“ქიმიზონეგუმათანე - bring “carrier light” (star)

ბჟამიეკმაჩუნჯე - following the Sun”¹⁸

“ჟინიჰაკასნოთეთრდგრქრ - upon sky (air) standing as beacon,

თუღონჰავამასრნთებელო - illuminating the world,

გრმათანემერეხირექრ - illuminator you are the star,

გოთანამიმახარებელო - daybreak herald”¹⁹

In the Lexicon of Sulkhan-Saba Orbeliani²⁰ Aphrodite is explained as “dawn star”, in the Greek mythology Aphrodite was the face of the planet Venus.

In 4000 BC in the Gokhari megalithic complex the heliacal rising of the planet Venus was a religious and ritual ceremony for the people of this region. In his book “Georgian Megalithic Culture” L. Meliksed Beg describes the Gokhnari megalithic complex and mentions that in one of the mining digsthe expedition found an ancient stone woman that supposedly represented the religious cult worshipped by the local people⁶. S. Makalatia in his book “Cult of phallus in Georgia” indicates that contemporary Georgian celebrations of “Harikela”, “Adrikela”, “Saqmisi”, “Keenoba”, “Berikaoba” are connected to the cult of phallus and kteis, worshipping the goddess of fertility²¹. The stone woman was the materialized symbol of the planet Venus, the Goddess of fertility. She was perceived as the source of life and light, the herald of daybreak and therefore people worshipped Venus which is reflected also in the Gokhari

megalithic complex.

7. Conclusion

Though the ethnographic data was not collected during the classical period, our arguments point to the term “sapasas chuti,” the ploughman stars, and the activities of contemporary ploughmen as being connected to the bright star Arcturus in the ancient ploughman asterism now Bootes. Thus, the ethnographic data is shown to be connected to the ancient sky, though this connection was not known by the ethnographer at the time the interviews were collected. We are the first scientists to present the connection between the ethnographic data and the ancient sky, and our remaining conclusions are based on this connection.

Combining ethnographic data that shows the importance of Venus and Arcturus along with the measurements of possible celestial alignments and computer modeling we conclude that the megalithic complex of Gokhnari was designed for observing the heliacal positions of planets and stars along the horizon. Focusing on the ethnographic data, we established that the “dawn star” refers to Venus which is not uncommon in other cultures and that the “Beacon Star” is Arcturus. The strength of this conclusion is based on the heliacal position of Arcturus to the extreme north and Venus to the east on the summer solstice.

Based on the results, we conclude that the megalithic complex of Gokhnari is oriented to the heliacal rising of the planets and stars. These astronomical phenomena were observed from circular or semicircular megalithic objects that are probable observing platforms. The configuration of the megalithic objects was aligned to the natural monoliths and local topography, thus giving the possibility to observe the risings and settings of the celestial bodies in the astronomical significant periods of winter, summer solstices, and vernal and autumnal equinoxes.

Based on the results of the modeling and corresponding ethnographic data we can conclude that this complex was built in 4000 BC.

8. References

1. Meliksed-Beg L. Megalithic Culture in Georgia. Publication Company: Merani, 1938.
2. Feldman Marian H. Luxurious Forms: Redefining a Medi-

- terranean International Style. 1400–1200 b.c.e. 2002; 6–29.
3. Shanshashvili N, Narimanishvili G. Mitanian Seals from South Caucasus in the Context of Caucasian near Eastern Contacts in the 15th - 14th CC. B.C. 2015; 72–89.
 4. Batonishvili V. Geography of Georgia. published by M. Janashvili. Maksim Sharadze Publication Company: Tbilisi. 1892.
 5. King Vakhtang VI. Dasturlamali. Published by P. Ushikishvili. Literature and Khelovneba Publication Company: Tbilisi, 1880.
 6. Bedukadze S. Ethnographic data, Ioseb Datuashvili, patronymic Vasil, 84 years old, a ploughman. Archive. Dmanisi. 1964.
 7. Marriott CA. SkyMap Pro 11 Product Information. Available from: http://www.skymap.com/smp_info.htm. 1997.
 8. Rogers John H. Origins of the Ancient Constellations: II the Mediterranean Traditions. *Journal of the British Astronomical Association*. 1998; 2(108):79–89.
 9. Faruq G, Shamsuddin F, Jenifer A, Jusoh SH, Nezhadahmadi A, Khalid N. Optimization of Media and Cold Pretreatment for Anther Culture using Japonica/indica and Indica/Indica Hybrids and their Callus Induction Comparisons in different Rice Crosses. *Indian Journal of Science and Technology*. 2014 Jan; 7(11):1–10.
 10. Amin N. Investigation of Culture Filtrate of Endophytic Fungi *Nigrospora* Sp. Isolate Rs 10 in Different Concentrations towards Root-knot Nematode *Meloidogyne* Spp. *Indian Journal of Science and Technology*. 2013 Sep; 6(9):1–5.
 11. Krishna Rao S. Early Man and his Culture from Eritrea in Northeast Africa. *Indian Journal of Science and Technology*. 2007 Dec; 1(2):1–8.
 12. Ptolemy, Toomer GJ. Ptolemy's *Almagest*. Available from: <http://books.google.com/books?id=6tNFAQAIAAJ>, 1984; 693 pp.
 13. Schaaf F. *The Brightest Stars*. John Wiley & Sons, Inc. Publication Company: Canada. 2008; 120 pp.
 14. Finkelberg M. She Turns about in the Same Spot and Watches for Orion: Ancient Criticism and Exegesis of Od. 5.274 = Il. 18.488.2004; 231–44. Available from: <http://grbs.library.duke.edu/article/view/121/121>.
 15. Culmination. *Collins English Dictionary - Complete & Unabridged 10th Edition*. . HarperCollins Publishers. Available from: <http://www.dictionary.com/cite.html?qh=culmination&ia=ced2,2009>.
 16. Kotetishvili V. *National poetry*. Second edition. Tbilisi Publication Company: Tbilisi. 1961.
 17. Rustaveli S. *The knight in the tiger's skin*. Published by Ingoroqva Pavle. Tbilisi Publication Company: Tbilisi. 1939.
 18. Gudava T. *National Georgian folk-lore; Mingrelian text*. Tbilisi Publication Company: Tbilisi. 1975.
 19. Samushia K. *Georgian Folk-Lore, Mingrelian Samples*. Tbilisi Publication Company: Tbilisi.1990.
 20. Orbeliani SS. *Georgian Dictionary (Lek`sikoni K`art`uli)*. Merani Publication Company: Tbilisi .1991.
 21. MakalaTia S. *Cult of phallus in Georgia*. First Publication Company: Tbilisi. 1926.