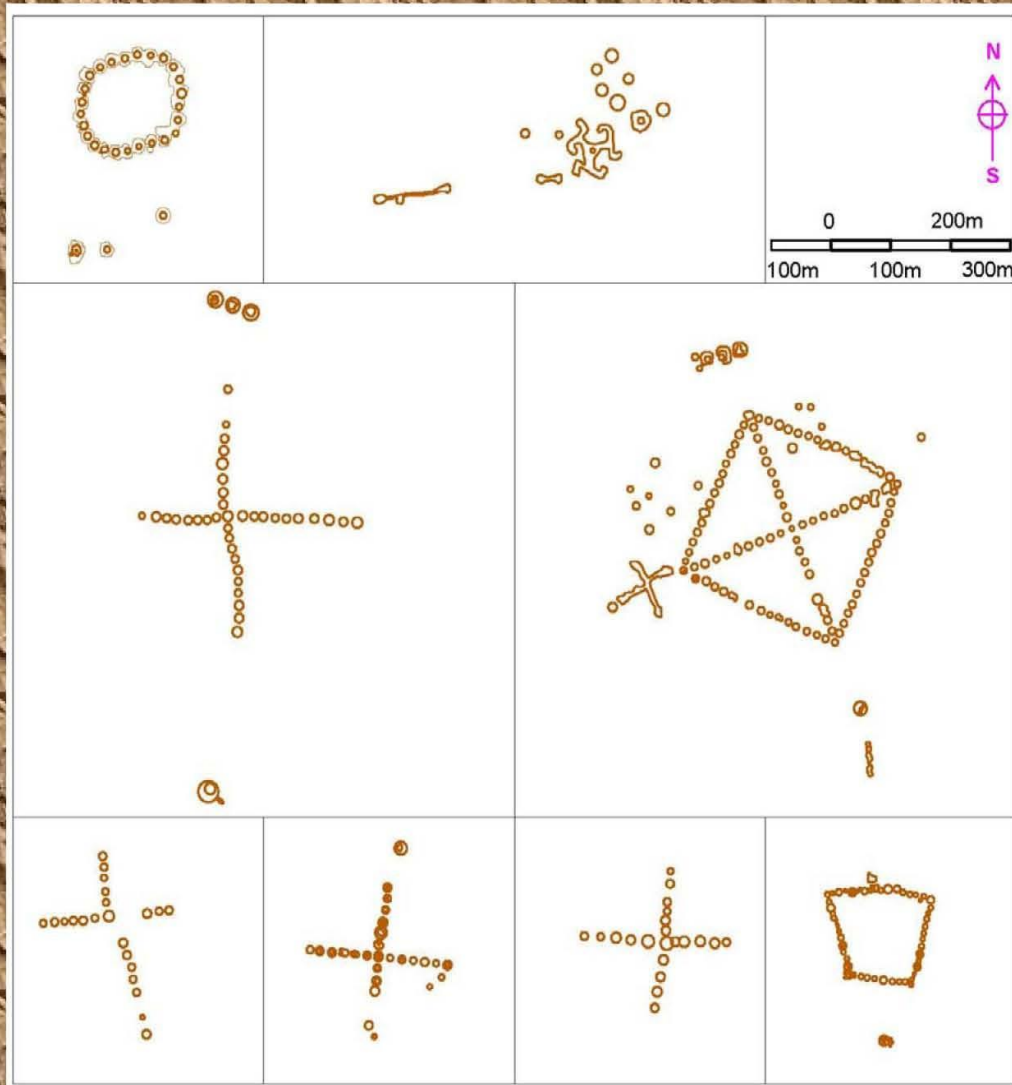


ANCIENT GEOGLYPHS OF THE KAZAKHSTAN

FORMS and POSITIONS

Research papers
by A.E.Dzubanov, M.G.Manatova,
V.K.Sokoleva, N.E.Sharipbek,
V.A.Goriachikh, G.V.Pereboev,
K.I.Samoilov



Almaty, 2016

1. The Introduction

The main number of geoglyphs in the Kostanay region of the Kazakhstan were opened in 2007 by Dmitriy Dey [1,19]. The “Kostanay’s tetragon” geoglyph was opened in November 2016 [29, 30]. The Express-analysis of shapes and arrangement was made by Dr. Konstantin Samoilov in October 2016 [24, 25, 26, 27, 28].

Objects are groups of earthwork hills. Objects have different shapes and sizes. Functions of objects were not yet been determined, but there are different versions [14]. **Currently there are (supposedly) oldest architectural monuments on the Kazakhstan’s territory.**

Now the greatest attention are attracted to eight objects:

- **the “Ashtasti's Large cross” hills complex** (50°13'39.62"N, 66°17'31.15"E) - Overall dimensions: 431m x 386m;
- **the “Ushtogay's Square” hills complex** (50°49'58.48"N, 65°19'34.70"E) - Overall dimensions: 387m x 394m;
- **the “Kogay’s cross” hills complex** (50°22'31.96"N, 65°27'43.98"E) - Overall dimensions: 280m x 212m.
- **the “Ekedyn's cross” hills complex** (49°30'44.68"N, 65°51'44.09"E) - Overall dimensions: 249m x 229m;
- **the “Amangel'dy's cross” hills complex** (50°10'8.00"N, 65°44'53.83"E) - Overall dimensions: 225m x 218m;
- **the “Kostanay's tetragon” hills complex** (53°11'33.81"N; 63°44'29.34"E) - Overall dimensions: 199m x 171m;
- **the “Bestam's ring” hills complex** (50°22'05.97"N; 66°09'01.06"E) - Overall dimensions: 195m x 153m;
- **the “Turgay triskelion” Hill and other hills complex** near Urpek village (50°06'09.82"N, 65°21'40.90"E) - Overall dimensions: 95m x 95m (We believe that the name **“triskelion”** more accurately reflects of the form’s specific, than “three-prong swastika” or “triradial fylfot”).

Data for the Album prepared by the researcher group of the Architectural Department of the Kazakh Leading Academy of Architecture and Civil Engineering. Authors expresses their gratitude to Internet resources – <https://www.google.com> ; <http://earth.google.com> ; <https://www.wikipedia.org> – which to provide the ability to collect an information.

This Album generated for information purposes of the Educational course “The Ancient architecture of the Kazakhstan” and a base for further researches.

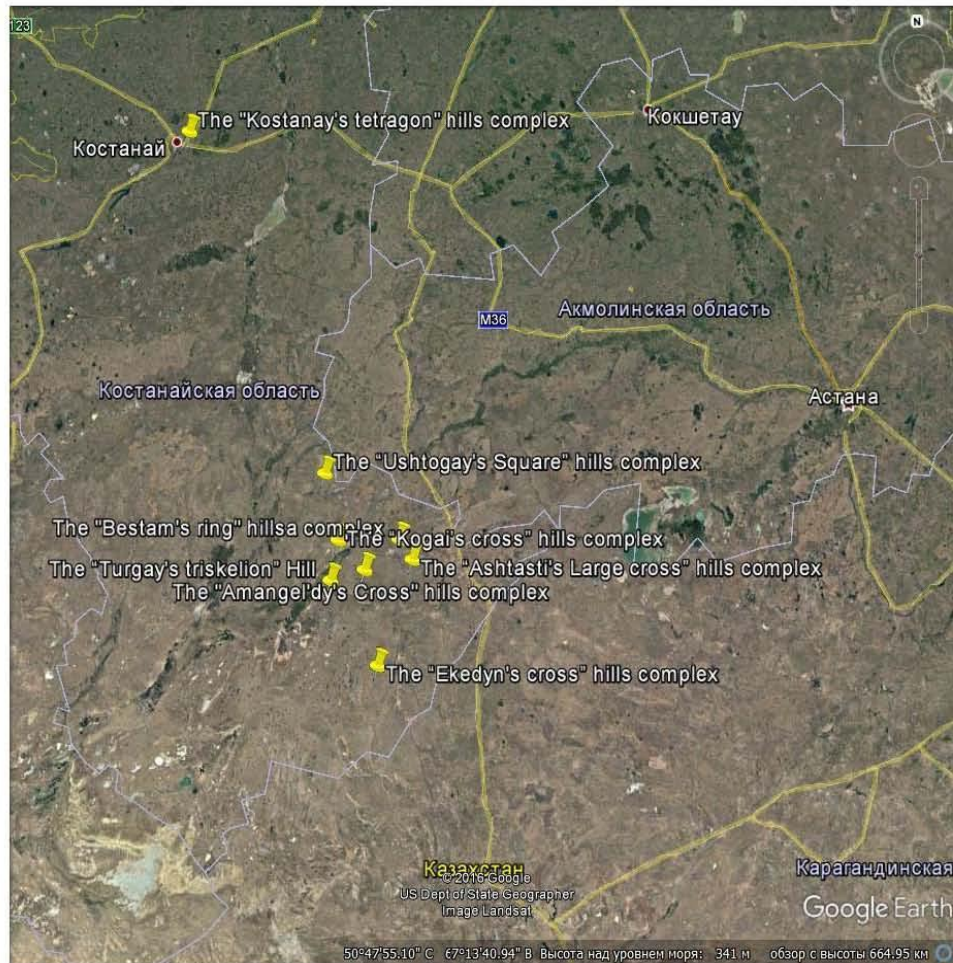
The front cover: Ancient Kazakstan's Geoglyphs – Drawing by K.I.Samoilov, 2016.

Source: Text by research authors

ANCIENT GEOGLYPHS OF THE KAZAKHSTAN (FORMS & POSITIONS)

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2. Ancient Kazakhstan' geoglyphs Earth's position



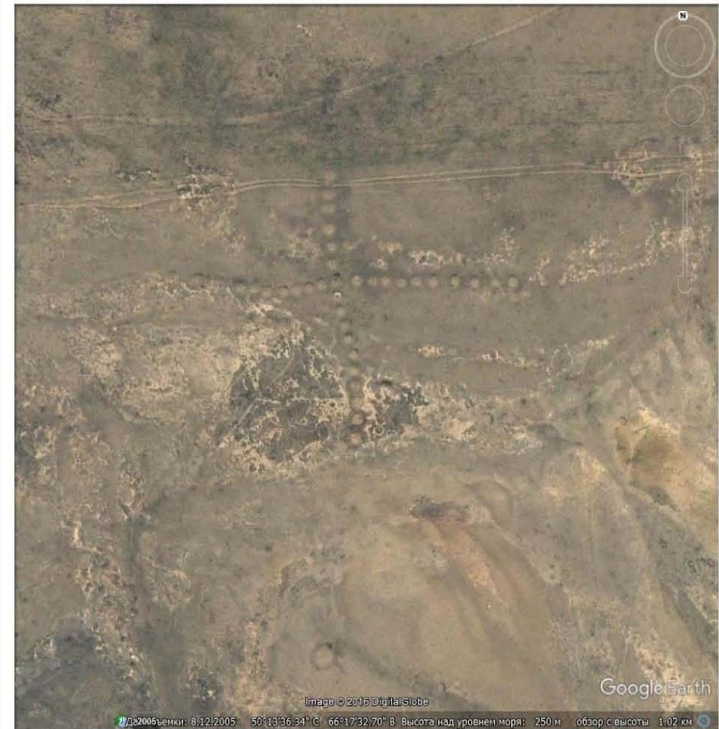
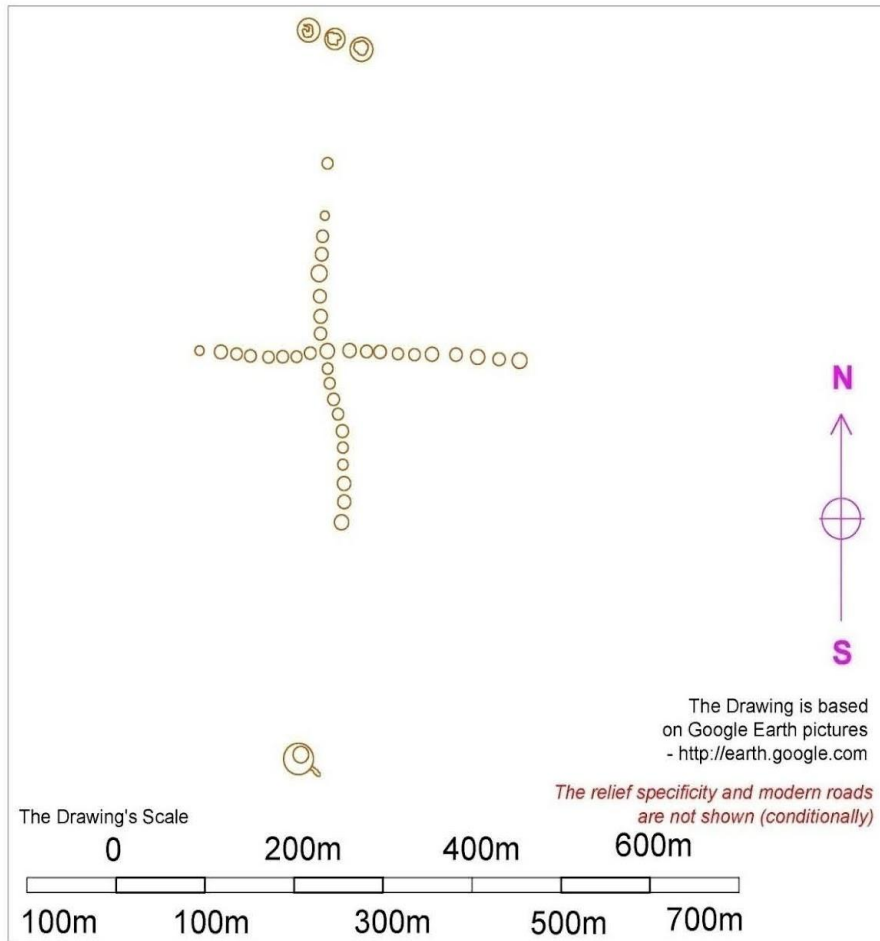
Objects are located in 370 km to the west of the capital of the Kazakhstan - the Astana city

Source: GoogleEarth Images: <http://earth.google.com>

ANCIENT GEOGLYPHS OF THE KAZAKHSTAN (FORMS & POSITIONS)

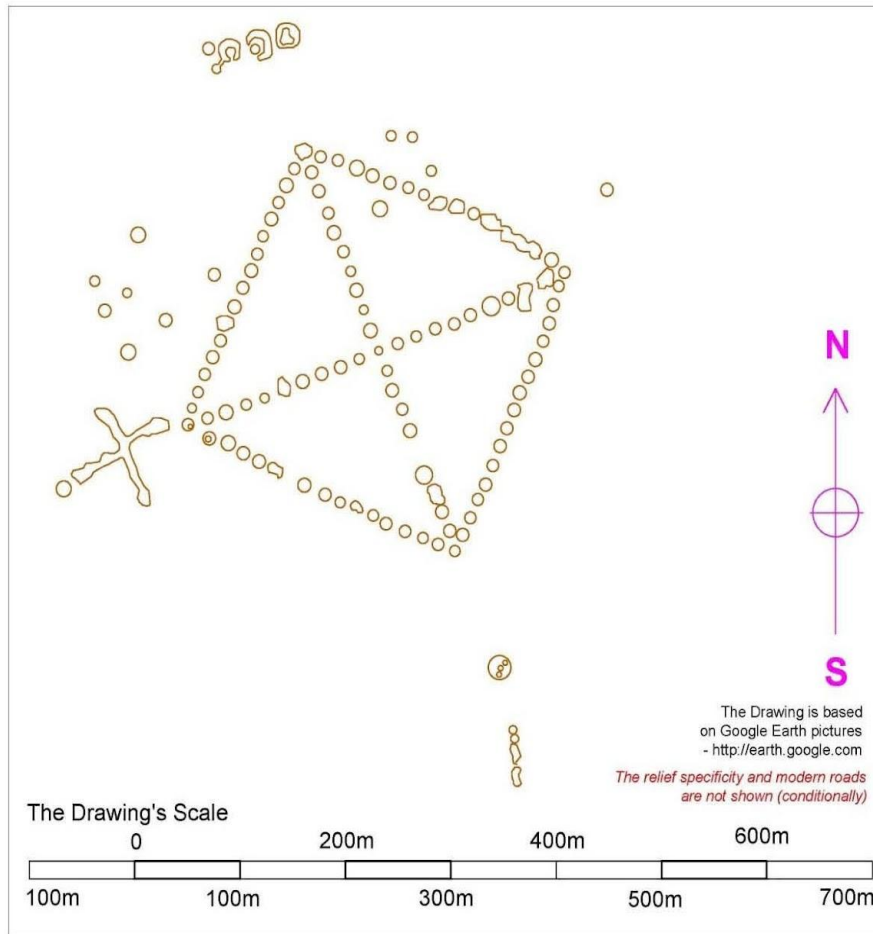
Research papers by A.E.Dzubanov, M.G.Manatova, V.K.Sokolova, N.E.Sharipbek, V.A.Goriachikh, G.V.Pereboev, K.I.Samoilov

3. The Ashtasti's Large cross hills Complex, Kostanay region, Kazakhstan



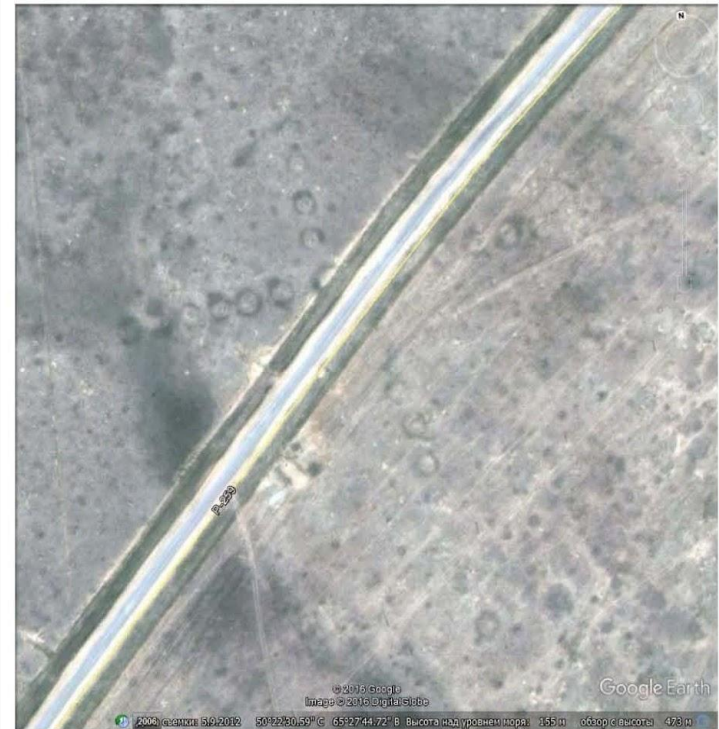
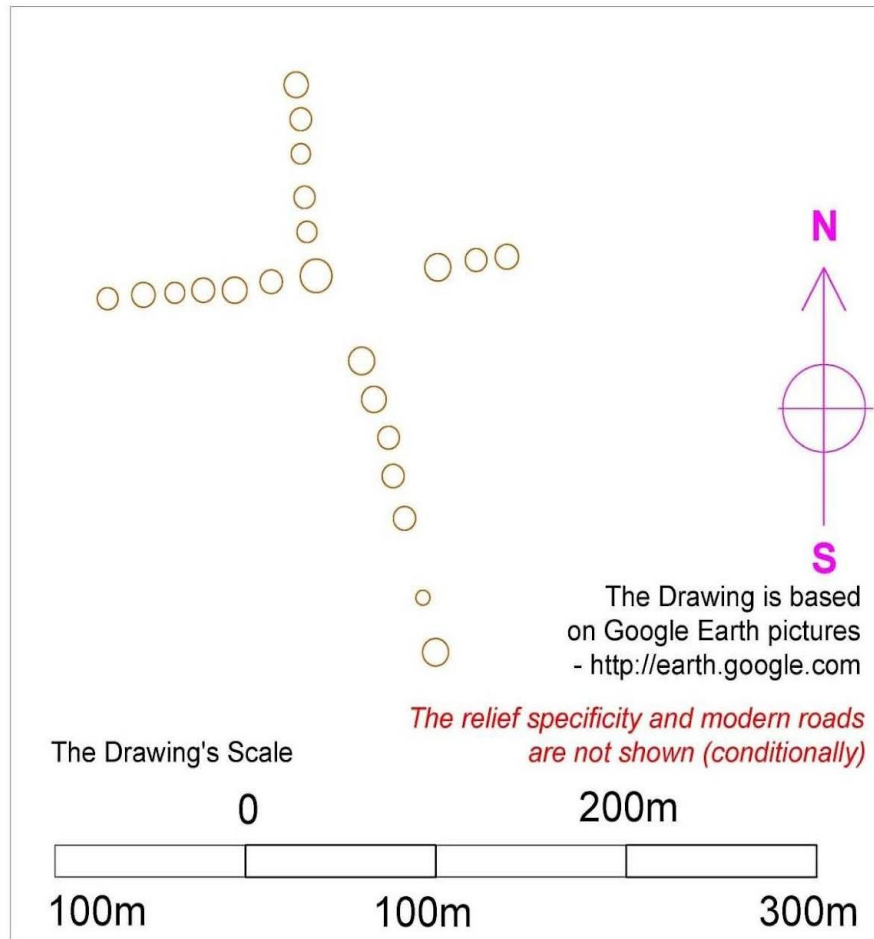
Overall dimensions: 431m x 386m
50°13'39.62"N, 66°17'31.15"E

4. The Ushtogay's Square hills Complex, Kostanay region, Kazakhstan



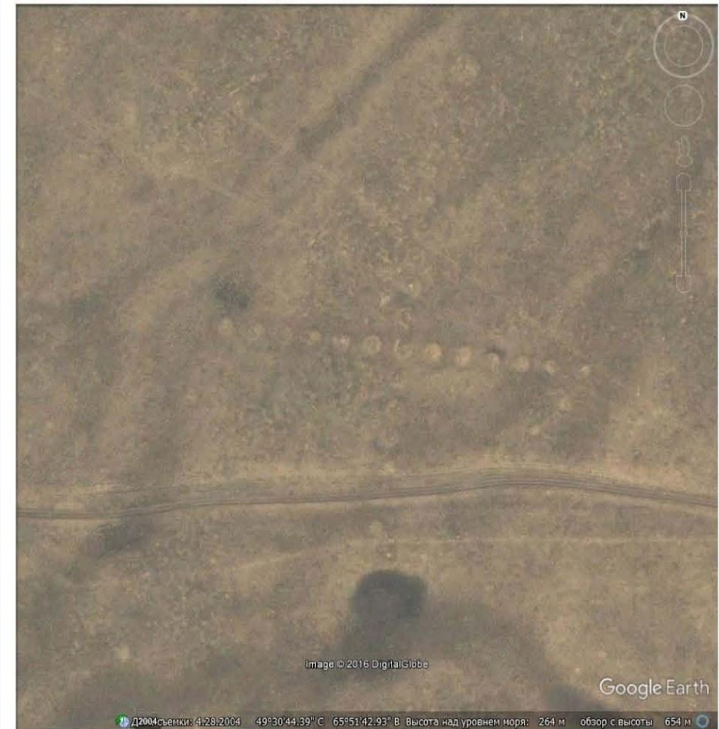
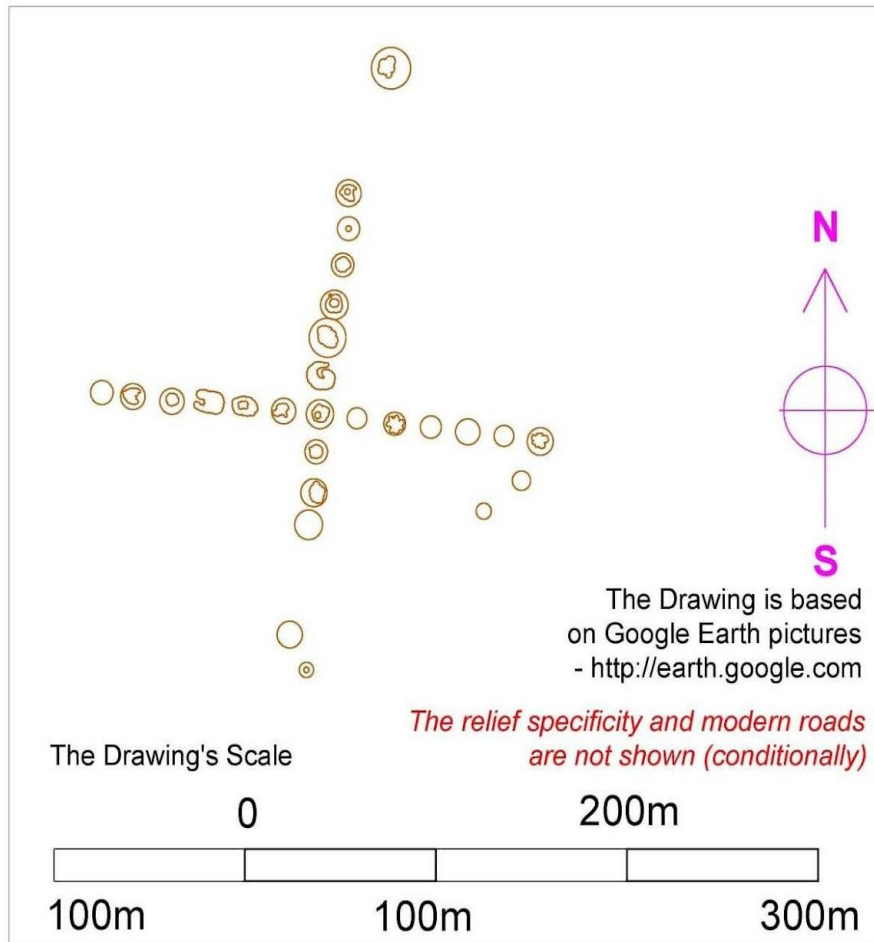
Overall dimensions: 387m x 394m
50°49'58.48"N, 65°19'34.70"E

5. The Kogay's cross hills Complex, Kostanay region, Kazakhstan



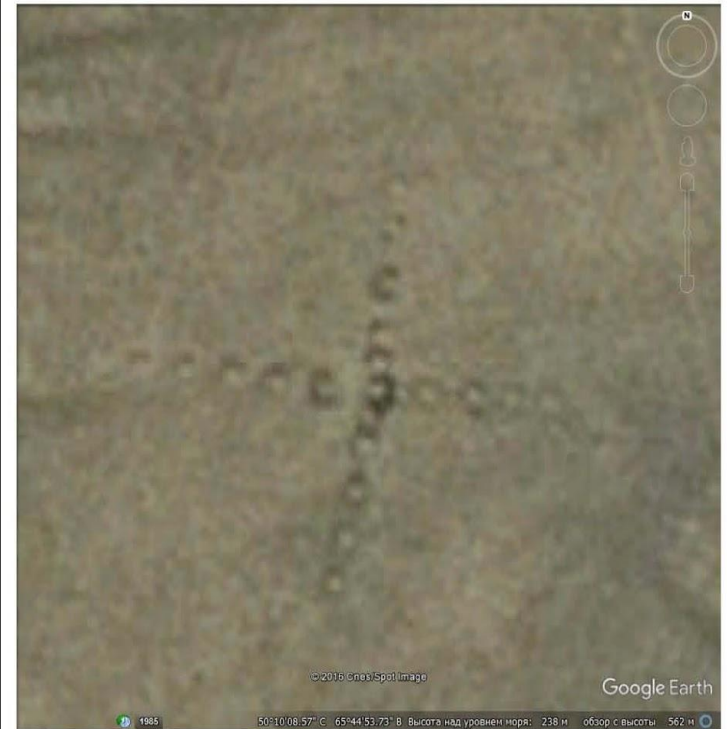
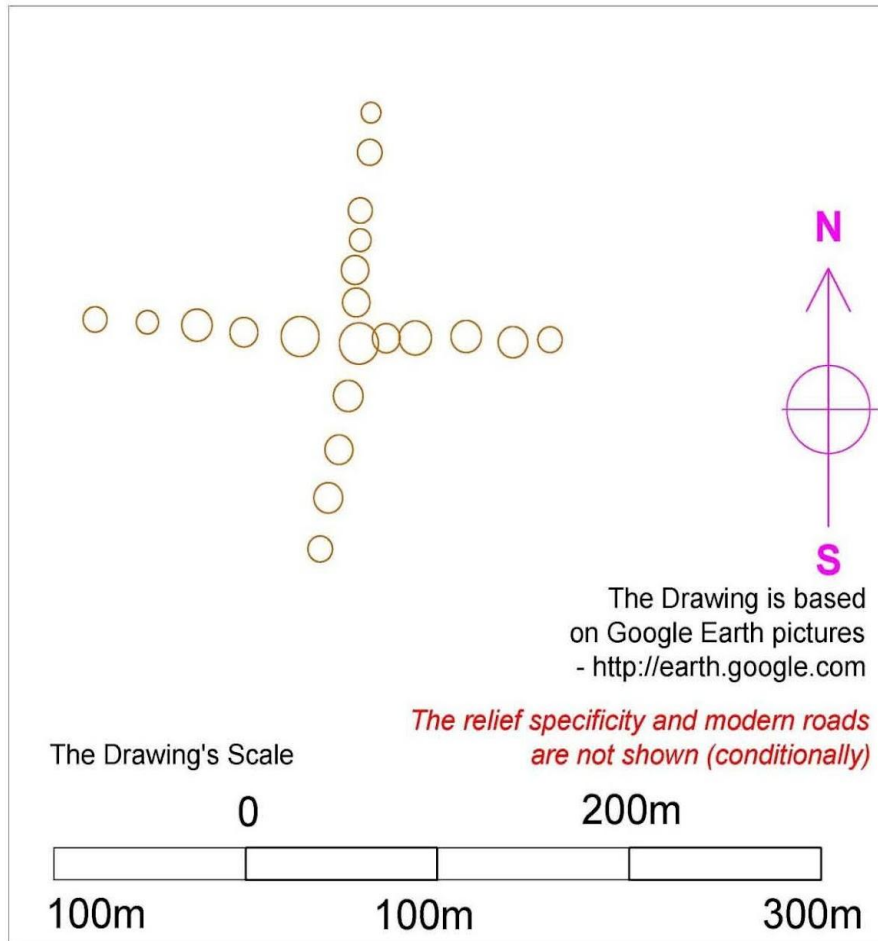
Overall dimensions: 280m x 212m
50°22'31.96"N, 65°27'43.98"E

6. The Ekedyn's cross hills Complex, Kostanay region, Kazakhstan



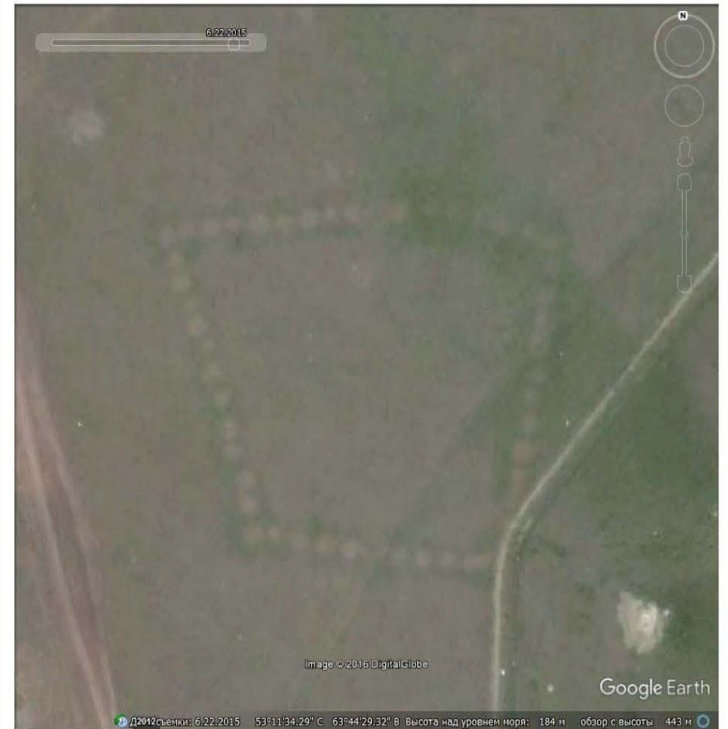
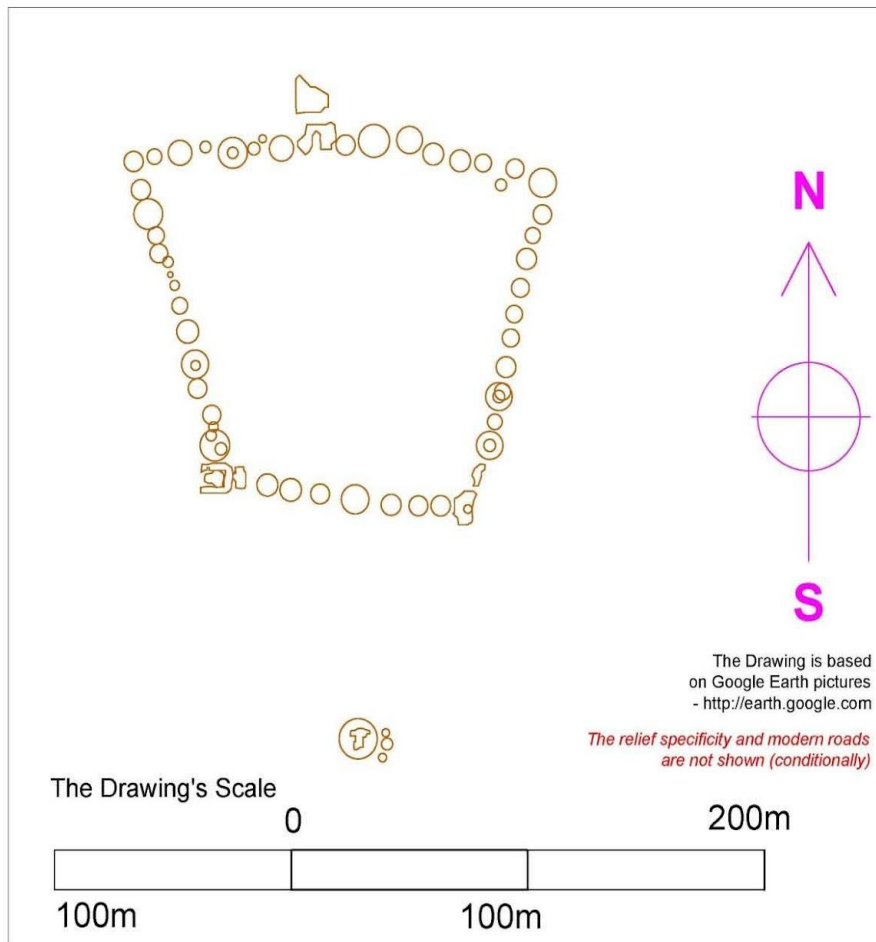
Overall dimensions: 249m x 229m
49°30'44.68"N, 65°51'44.09"E

7. The Amangel'dy's cross hills Complex, Kostanay region, Kazakhstan



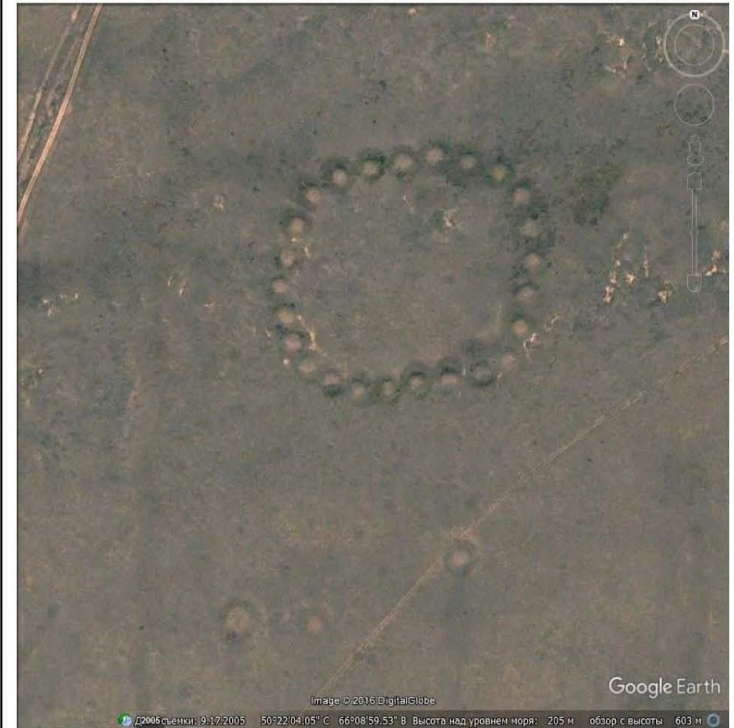
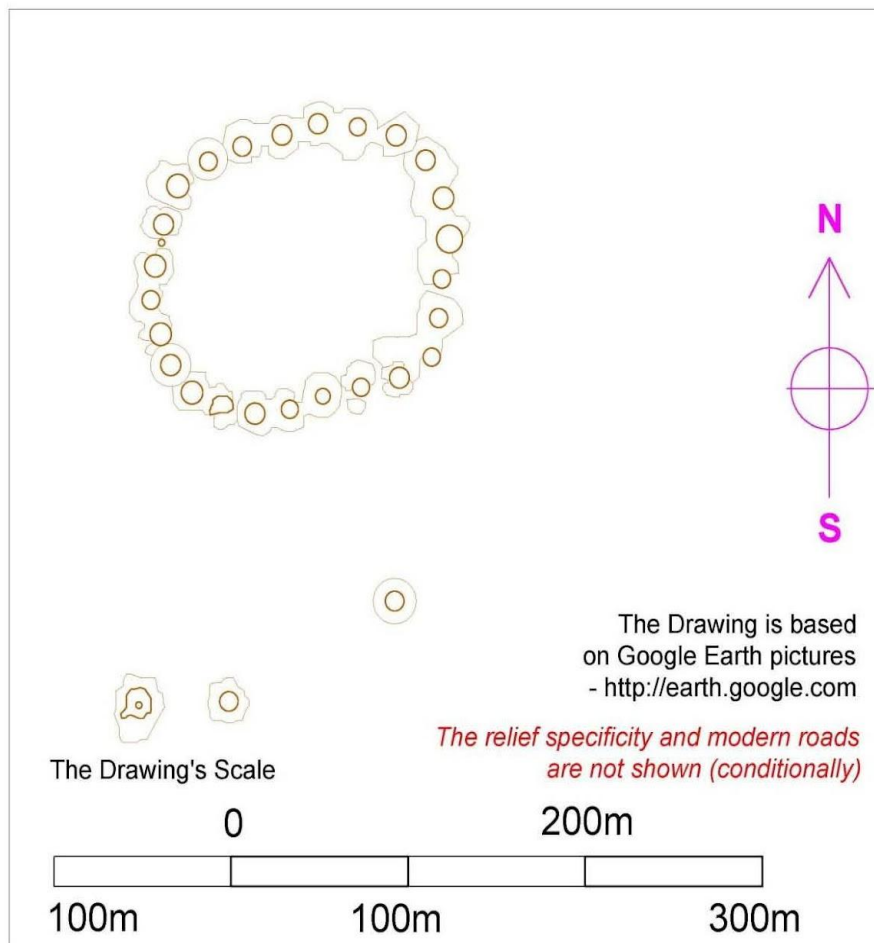
Overall dimensions: 225m x 218m
50°10'8.00"N, 65°44'53.83"E

8. The Kostanay's tetragon hills Complex, Kostanay region, Kazakhstan



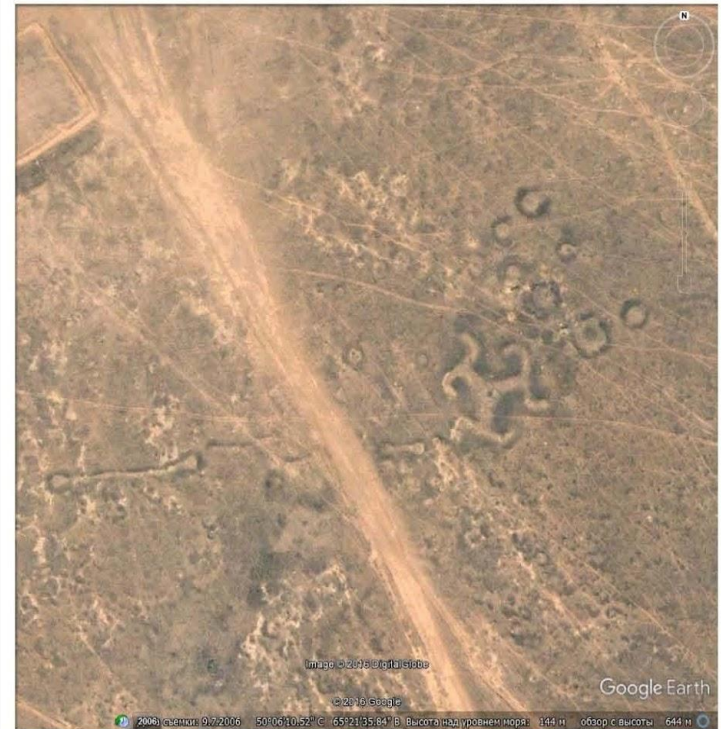
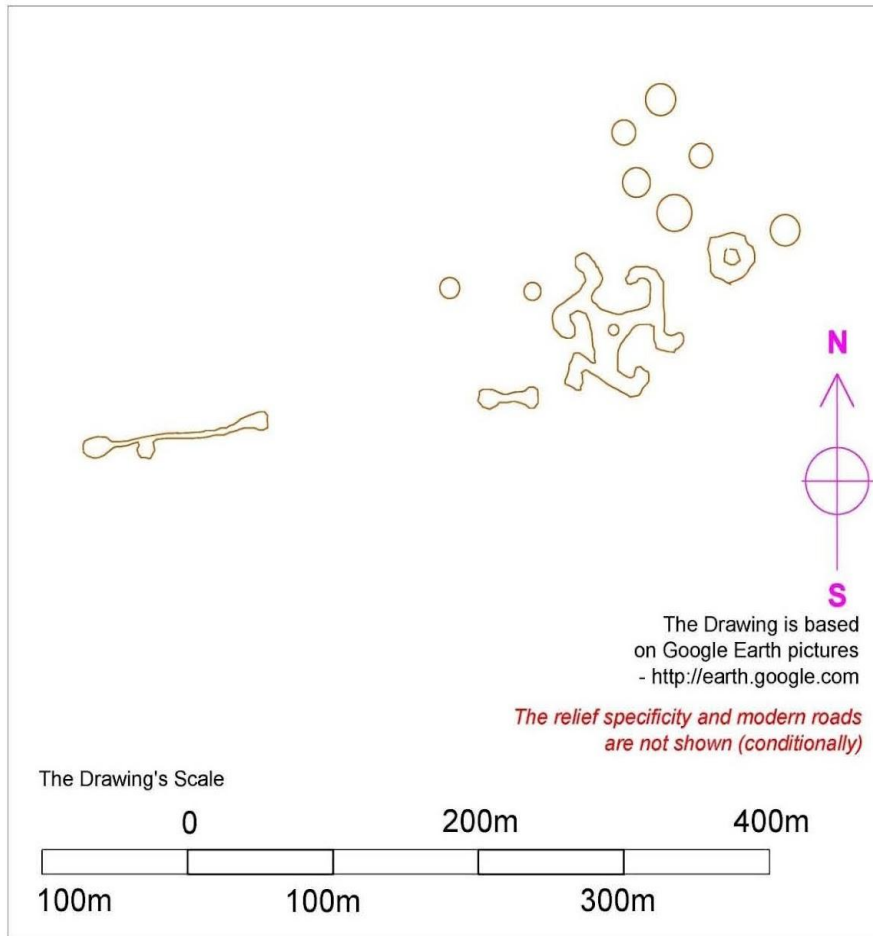
Overall dimensions: 199m x 171m
53°11'33.81"N; 63°44'29.34"E

9. The Bestam's ring hills Complex, Kostanay region, Kazakhstan



Overall dimensions: 195m x 153m
50°22'05.97"N; 66°09'01.06"E

10. The Turgay's triskelion Hill and other hills Complex, Kostanay region, Kazakhstan



Overall dimensions: 95m x 95m
50°06'09.82"N, 65°21'40.90"E

11. Earthwork volumes and turnaround time (presumably)

Calculation of excavation shows the fundamental possibility of the implementation figures in one season (from May to September, 22 weeks, 132 working days).

The “Turgay’s triskelion” Hill and other hill complex:

- the number of different hills - 12; the average dimension of a hill - a total square of 5500 square meters, the height of 0,75 m; the bulk of earthwork 4125 cubic meters; the complexity of 8250 man-hours (the capacity of 0.5 cubic meters per hour) or a 1031 person-days (8 hours per day);
the required number of diggers in the season – 8.

The “Ushtogay's Square” hills complex:

- the number of hills - 136; the average dimension of a hill - a diameter of 9,0 m, the height of 0,9 m; the bulk of earthwork 7783 cubic meters; the complexity of 15566 man-hours (the capacity of 0.5 cubic meters per hour) or a 1946 person-days (8 hours per day);
the required number of diggers in the season – 15.

The “Ashtasti's Large cross” hills complex:

- the number of hills - 41; the average dimension of a hill - a diameter of 10,0 m, the height of 0,65 m; the bulk of earthwork 2092 cubic meters; the complexity of 4184 man-hours (the capacity of 0.5 cubic meters per hour) or a 523 person-days (8 hours per day);
the required number of diggers in the season – 4.

The “Ekedyn's cross” hills complex:

- the number of hills - 28; the average dimension of a hill - a diameter of 9.0 m, the height of 0,65 m; the bulk of earthwork 1157 cubic meters; the complexity of 2314 man-hours (the capacity of 0.5 cubic meters per hour) or a 289 person-days (8 hours per day);
the required number of diggers in the season – 3.

12. Earthwork volumes and turnaround time (presumably)

The “Kogay’s cross” hills complex:

- the number of hills – 22+5*; the average dimension of a hill - a diameter of 10,0 m, the height of 0,65 m; the bulk of earthwork 1378 cubic meters; the complexity of 2755 man-hours (the capacity of 0.5 cubic meters per hour) or a 344 person-days (8 hours per day);
the required number of diggers in the season – 3.

The “Amangel’dy’s cross” hills complex:

- the number of hills - 20; the average dimension of a hill - a diameter of 12,0 m, the height of 0,65 m; the bulk of earthwork 1470 cubic meters; the complexity of 2939 man-hours (the capacity of 0.5 cubic meters per hour) or a 367 person-days (8 hours per day);
the required number of diggers in the season – 3.

The “Bestam’s ring” hills complex:

- the number of hills - 28; the average dimension of a hill - a diameter of 13,0 m, the height of 0,65 m; the bulk of earthwork 2414 cubic meters; the complexity of 4828 man-hours (the capacity of 0.5 cubic meters per hour) or a 604 person-days (8 hours per day);
the required number of diggers in the season – 5.

The “Kostanay's tetragon” hills complex:

- the number of hills - 56; the average dimension of a hill - a diameter of 7,0 m, the height of 0,45 m; the bulk of earthwork 969 cubic meters; the complexity of 1939 man-hours (the capacity of 0.5 cubic meters per hour) or a 242 person-days (8 hours per day);
the required number of diggers in the season – 2.

13. Sizes comparison of Kazakhstan's famous geoglyphs and World's famous geoglyphs

Kazakhstan geoglyphs are different from most of the world famous geoglyphs.

- Firstly, different an execution technique: hills groups in the Kazakhstan, trenches in the UK and the Peru, stone laying in the Russia;
- Secondly, themes of forms: World's famous geoglyphs have zoomorphic and anthropomorphic forms, Kazakhstan's geoglyphs have abstract geometric forms;
- Thirdly, about functionality: the world famous geoglyphs - they are signs, Kazakhstan geoglyphs - they are buildings;
- Fourthly, sizes: Kazakhstan geoglyphs are somewhat larger.

The Ashtasti's Large cross hills Complex (Kazakhstan ~ 50°13'39.62"N, 66°17'31.15"E) ~ **431,0 m.**

The Ushtogay's Square hills Complex (Kazakhstan ~ 50°49'58.48"N, 65°19'34.70"E) ~ **394,0 m.**

The Kogay's cross hills Complex (Kazakhstan ~ 50°22'31.96"N, 65°27'43.98"E) ~ **280,0 m.**

The Zyuratkul's Moose geoglyph (Russia ~ 54°56'33"N; 59°11'30"E) ~ **275,0 m.**

The Ekedyn's cross hills Complex (Kazakhstan ~ 49°30'44.68"N, 65°51'44.09"E) ~ **249,0 m.**

The Amangel'dy's cross hills Complex (Kazakhstan ~ 50°10'8.00"N, 65°44'53.83"E) ~ **225,0 m.**

The Kostanay's tetragon hills Complex (Kazakhstan ~ 53°11'33.81"N; 63°44'29.34"E) ~ **199,0 m.**

The Bestam's ring hills Complex (Kazakhstan ~ 50°22'05.97"N; 66°09'01.06"E) ~ **195,0 m.**

The Lizard geoglyph (Peru ~ 14°41'18"S; 75°7'22"W) ~ **187,3 m.**

The Paracas Candelabra / Candelabra of the Andes geoglyph (Peru ~ 13°47'40.5"S 76°18'31.31"W) ~ **128,0 m.**

The Condor geoglyph (Peru ~ 14°41'50.41"S; 75°07'34.48"W) ~ **122,1m.**

The Uffington White Horse geoglyph (United Kingdom ~ 51°34'38.87"N; 01°34'1.32"W) ~ **111,8 m.**

The Turgay's triskelion Hill and other hills Complex (Kazakhstan ~ 50°06'09.82"N, 65°21'40.90"E) ~ **95,0 m.**

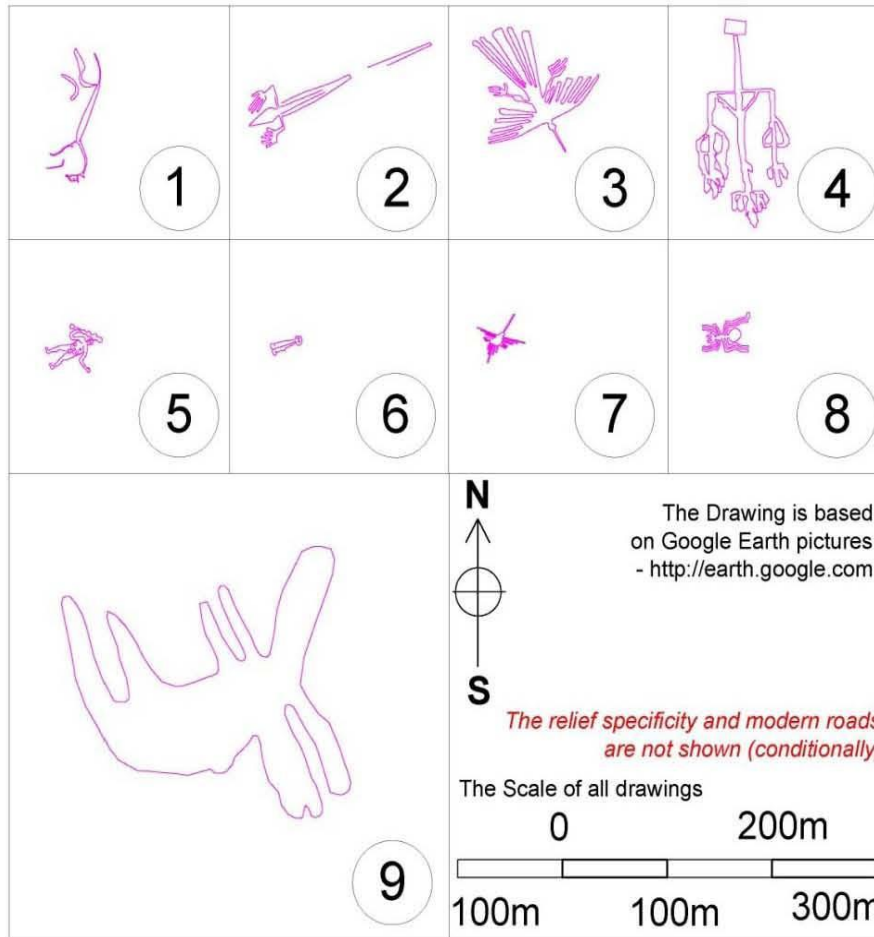
The Cerne Abbas Giant geoglyph (United Kingdom ~ 50°48'49"N; 02°28'29"W) ~ **54,1 m.**

The Hummingbird geoglyph (Peru ~ 14°41'31.8"S; 75°08'56.04"W) ~ **49,8 m.**

The Spider geoglyph (Peru ~ 14°41'38.95"S; 75°07'20.58"W) ~ **46,6 m.**

The Man geoglyph (Peru ~ 14°44'42.8"S; 75°04'47.1"W) ~ **30,1 m.**

14. World's famous geoglyphs: sizes comparison



1. The Uffington White Horse geoglyph
(United Kingdom – 51°34'38.87"N; 01°34'1.32"W)

2. The Lizard geoglyph
(Peru – 14°41'18"S; 75°7'22"W)

3. The Condor geoglyph
(Peru – 14°41'50.41"S; 75°07'34.48"W)

4. The Paracas Candelabra / Candelabra of the Andes geoglyph
(Peru – 13°47'40.5"S 76°18'31.31"W)

5. The Cerne Abbas Giant geoglyph
(United Kingdom – 50°48'49"N; 02°28'29"W)

6. The Man geoglyph
(Peru – 14°44'42.8"S; 75°04'47.1"W)

7. The Hummingbird geoglyph
(Peru – 14°41'31.8"S; 75°08'56.04"W)

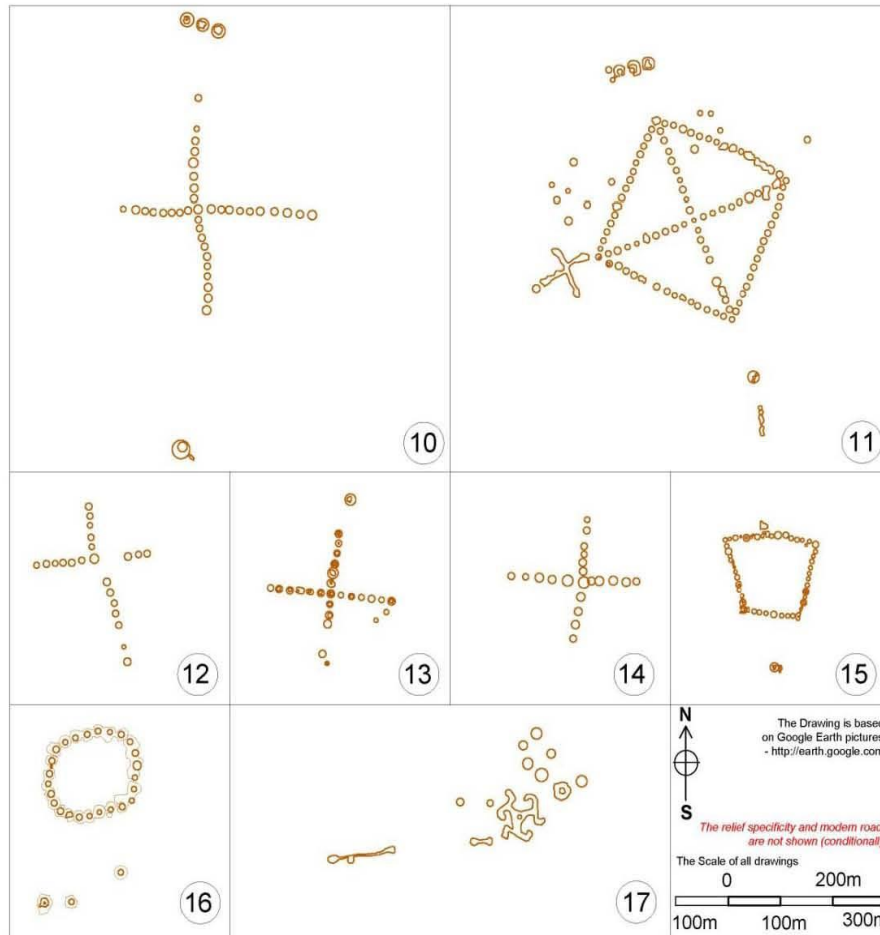
8. The Spider geoglyph
(Peru – 14°41'38.95"S; 75°07'20.58"W)

9. The Zyuratkul's Moose geoglyph
(Russia – 54°56'33"N; 59°11'30"E)

ANCIENT GEOGLYPHS OF THE KAZAKHSTAN (FORMS & POSITIONS)

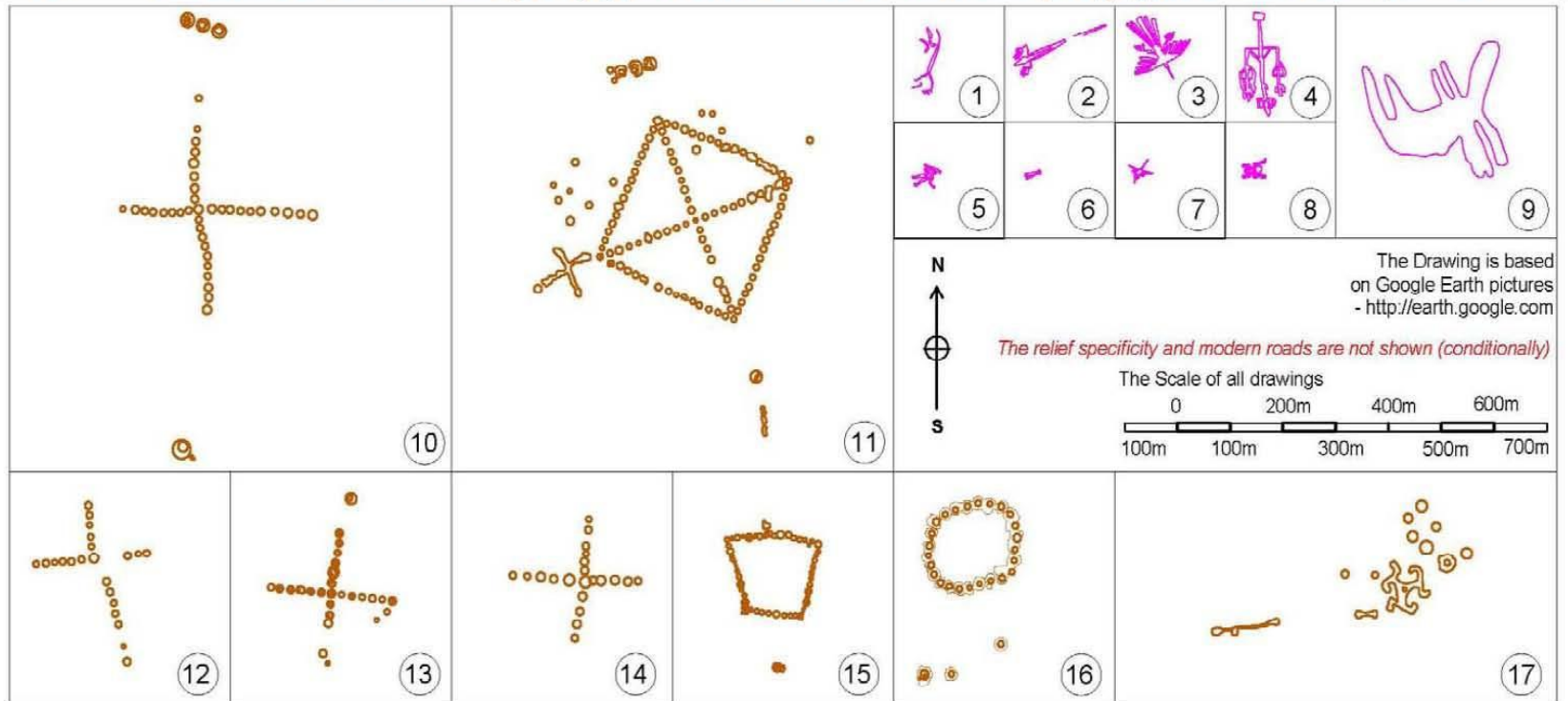
Research papers by A.E.Dzubanov, M.G.Manatova, V.K.Sokolova, N.E.Sharipbek, V.A.Goriachikh, G.V.Pereboev, K.I.Samoilov

15. Kazakhstan's famous geoglyphs: sizes comparison



Source: Drawing by K.I.Samoilov, 2016

16. Kazakhstan's famous geoglyphs and World's famous geoglyphs: sizes comparison



1. The Uffington White Horse geoglyph (United Kingdom), 2. The Lizard geoglyph (Peru), 3. The Condor geoglyph (Peru), 4. The Paracas Candelabra / Candelabra of the Andes geoglyph (Peru), 5. The Cerne Abbas Giant geoglyph (United Kingdom), 6. The Man geoglyph (Peru), 7. The Hummingbird geoglyph (Peru), 8. The Spider geoglyph (Peru), 9. The Zyuratkul's Moose geoglyph (Russia), 10. The Ashtasti's Large cross hills Complex (Kazakhstan), 11. The Ushtogay's Square hills Complex (Kazakhstan), 12. The Kogay's cross hills Complex (Kazakhstan), 13. The Ekedyn's cross hills Complex (Kazakhstan), 14. The Amangel'dy's cross hills Complex (Kazakhstan), 15. The Kostanay's tetragon hills Complex (Kazakhstan), 16. The Bestam's ring hills Complex (Kazakhstan), 17. The Turgay's triskelion Hill and other hills Complex (Kazakhstan).

17. Kazakh geoglyphs geometric position features

The Graphical representation of these objects allows to analyze the geometry and the orientation. The most famous Kazakh geoglyphs have interesting geometric position features:

- **The Geoglyph "Turgay triskelion" Hill.** Position of the north-eastern brand determines the direction to the Geoglyph "Ashtasty's Large cross" hills complex - distance of 67,925 km. Position of the south-western brand determines the direction to the Geoglyph "Kogay's cross" hills complex - distance of 31,189 km.
- **The Geoglyph "Ashtasty's Large cross" hills Complex.** Position of the western broken line determines the direction to the Geoglyph "Kogay's cross" hills complex - distance of 61,281 km. Its center coincides with the direction of the Geoglyph "Turgay triskelion" hills Complex north-eastern brand - distance of 67.925 km.
- **The Geoglyph "Kogay's cross" hills complex.** Its center coincides with directions on characteristic elements of other two geoglyphs: the western broken line of the "Ashtasty's Large cross" hills Complex - distance of 61,281 km; the south-western brand of the Geoglyph "Turgay triskelion" hills Complex - distance of 31,189 km.
- **The Geoglyph "Ekedyn's cross" hills complex.** Position of the south-north line determines the direction to the centre of the Geoglyph "Bestam's ring" hills complex - distance of 97,432 km.
- **The Geoglyph "Ushtogay's square" hills complex.** Position of the southern line determines the direction to the centre of **the Stonehenge megalith complex (Amesbury, United Kingdom)** - distance of 4543,437 km. This pattern is found in 2014 [13].

18. The Geometric feature ~ The direction from the Turgay's triskelion Hill to the Ashtasti's Large cross hills complex (Kostanay Region, Kazakhstan): **67925 m**



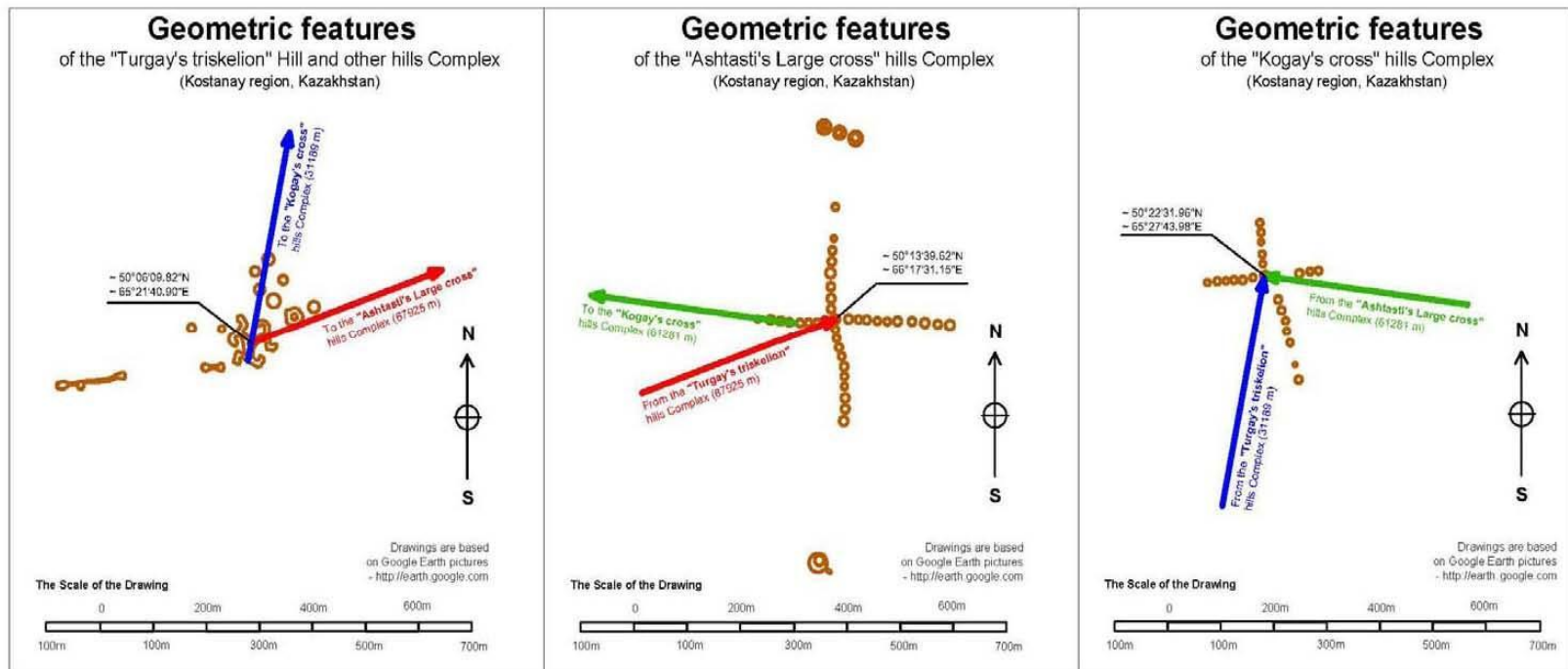
19. The Geometric feature ~ The direction from the Turgay triskelion Hill to the Kogay's cross hills complex (Kostanay Region, Kazakhstan): **31189 m**



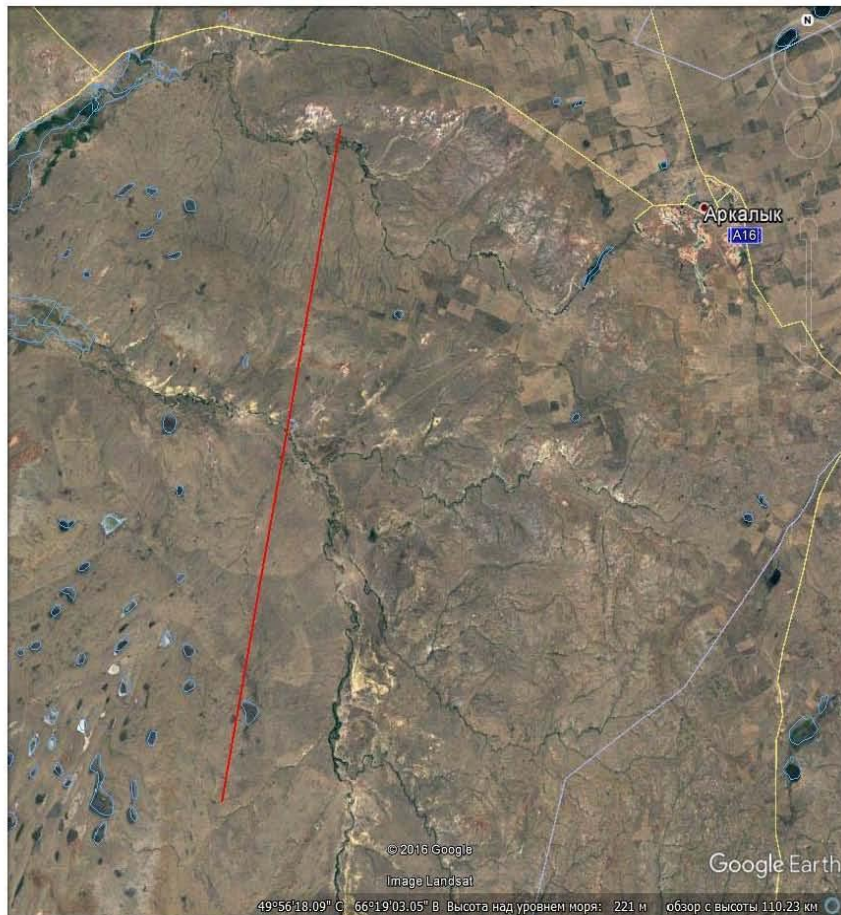
20. The Geometric feature ~ The direction from the Ashtasti's Large cross hills complex to the Kogay's cross hills complex (Kostanay Region, Kazakhstan): **61281 m**



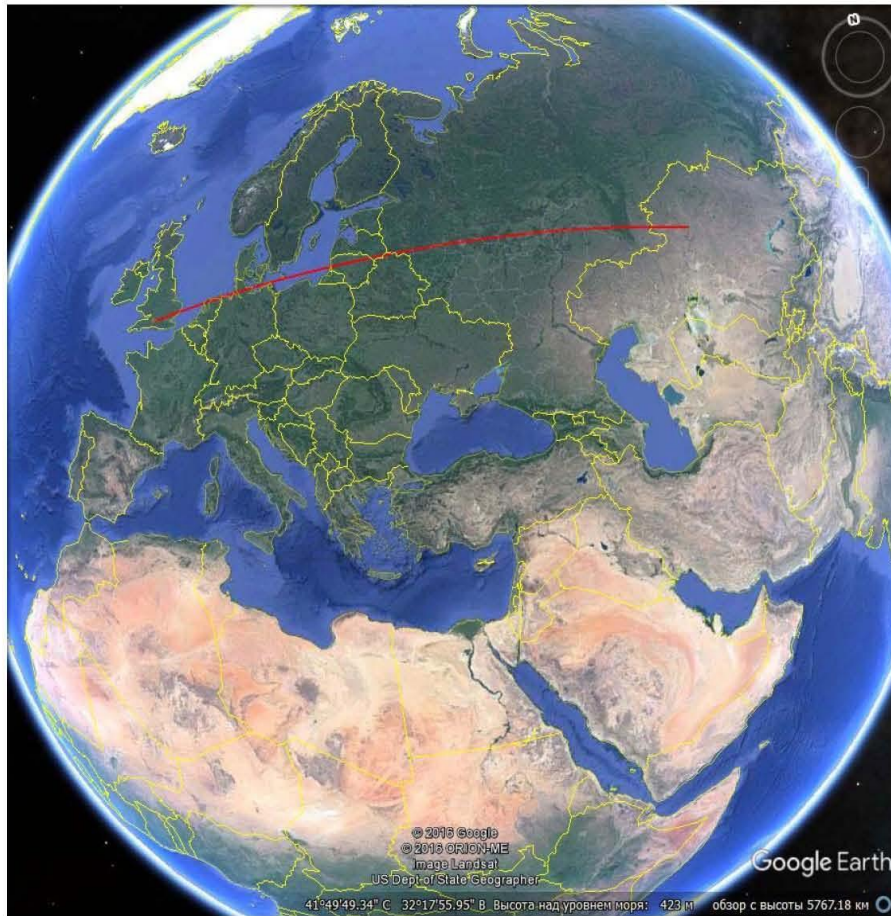
21. Position specifics of the Turgay's triskelion Hill and other hills Complex, the Ashtasti's Large cross hills Complex, the Kogay's cross hills Complex



22. The Geometric feature ~ The direction from the Ekedyn's cross hills Complex to the Bestam's ring hills Complex (Kostanay Region, Kazakhstan): **97432 m**



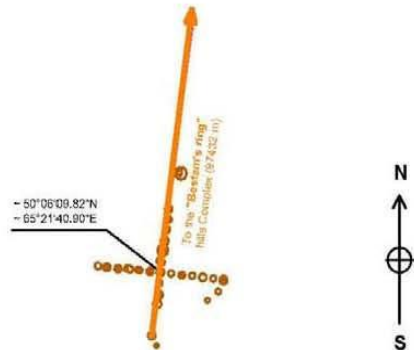
23. The Geometric feature ~ The direction from the Ushtogay's Square hills Complex (Kostanay Region, Kazakhstan) to the Stonehenge (Amesbury, United Kingdom): **4543437 m**



24. Position specifics of the Ekedyn's cross hills Complex, the Bestam's ring hills Complex, the Ushtogay's Square hills Complex

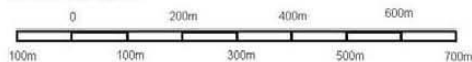
Geometric features

of the "Ekedyn's cross" hills Complex
(Kostanay region, Kazakhstan)



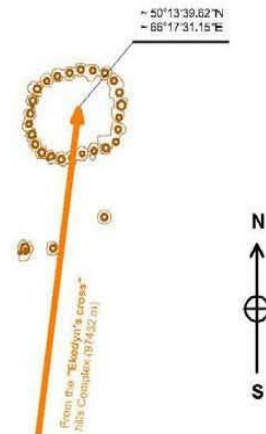
Drawings are based
on Google Earth pictures
- <http://earth.google.com>

The Scale of the Drawing



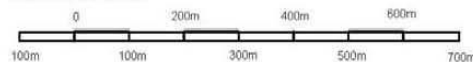
Geometric features

of the "Bestam's ring" hills Complex
(Kostanay region, Kazakhstan)



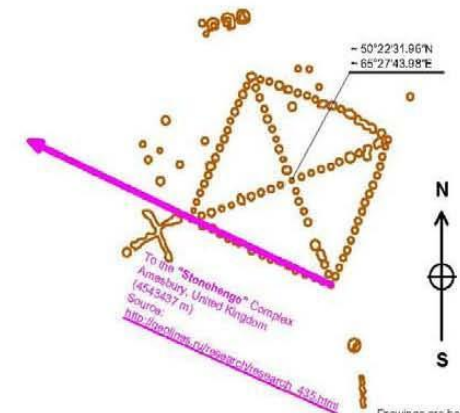
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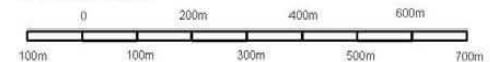
Geometric features

of the "Ushtogay's square" hills Complex
(Kostanay region, Kazakhstan)



Drawings are based
on Google Earth pictures
- <http://earth.google.com>

The Scale of the Drawing



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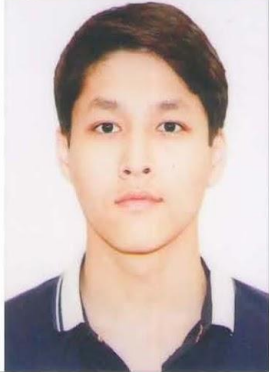
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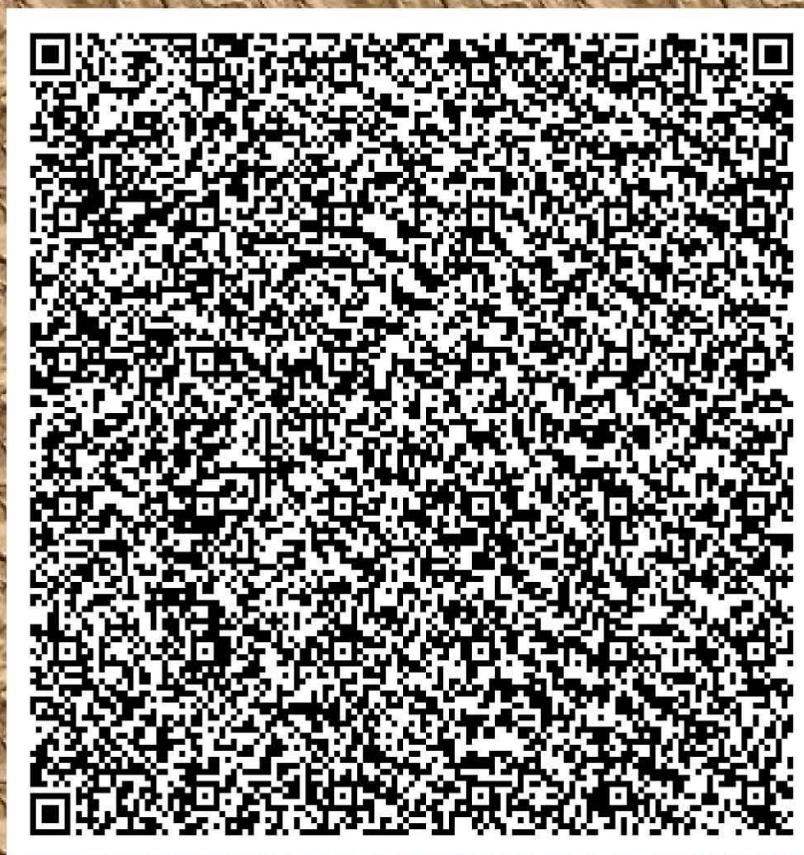
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