



MAA-AMET

Struve Geodetic Arc: National Report of Estonia

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Estonian Land Board / Head of the Department of Geodesy
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Activities in Estonia

Activities in Tartu Old Observatory

Activities in Simuna-Võivere

Struve application in the Google Play

<https://play.google.com/store/apps/details?id=com.struve.application>

Facts of Struve points in Estonia

Tartu Old Observatory

In entrance hall the map of Struve geodetic Arc is shown, as well activities described

In museum several instruments shown

Measurement techniques introduced at different events



Simuna-Võivere baseline

A walk in Simuna-Võivere is yearly event

Võivere windmill reconstructed, the exposition will
be prepared



22°

24°

26°

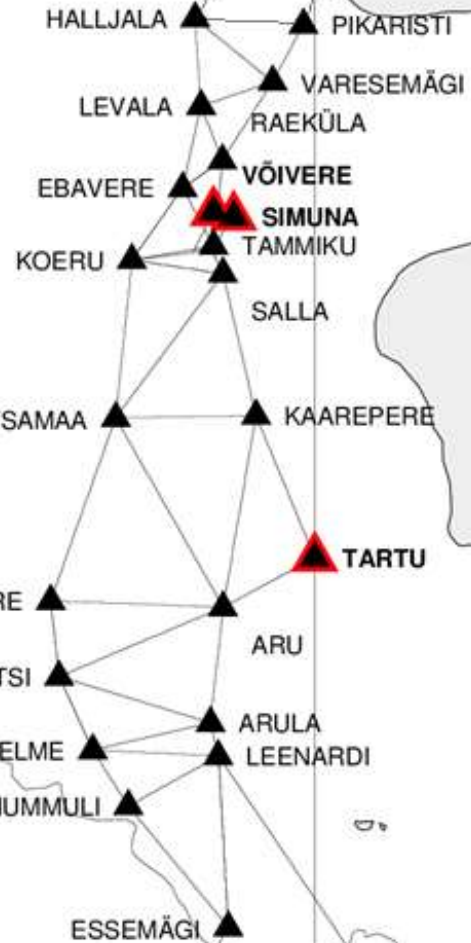
28°

Meridien von Dorpat

59°

58°

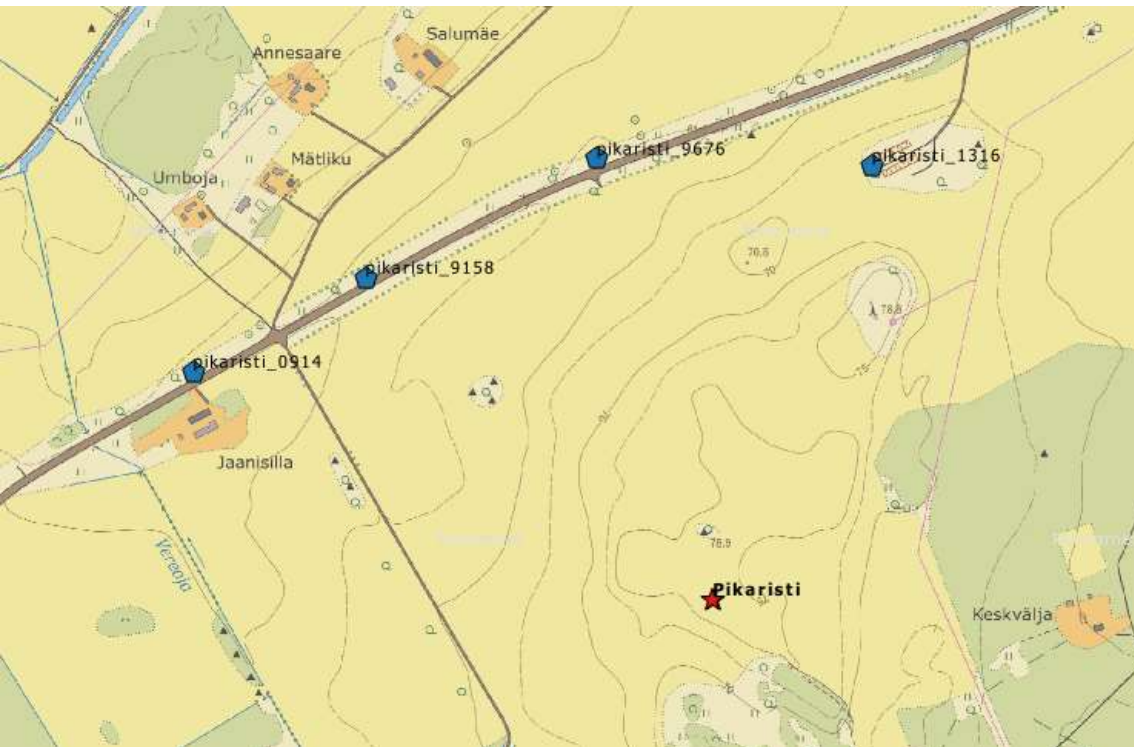
STRUVE GEODEETILINE KAAR EESTIS



PIKARISTI

Hohenkreutz

No trigonometric points nearby



HALJALA

Halljall

The stone part of the church tower was built at the end of the 15th century, later several times hit by thunderstorms

The church tower got its present shape in 1865



VARESEMÄGI

Warresmaggi

The triangulation point by the same name („*Varesemägi*“) has been used in the Estonian geodetic networks in 1856, 1892 and 1931

Inspection in June 1991

The point has a metal tower of about 30 meters

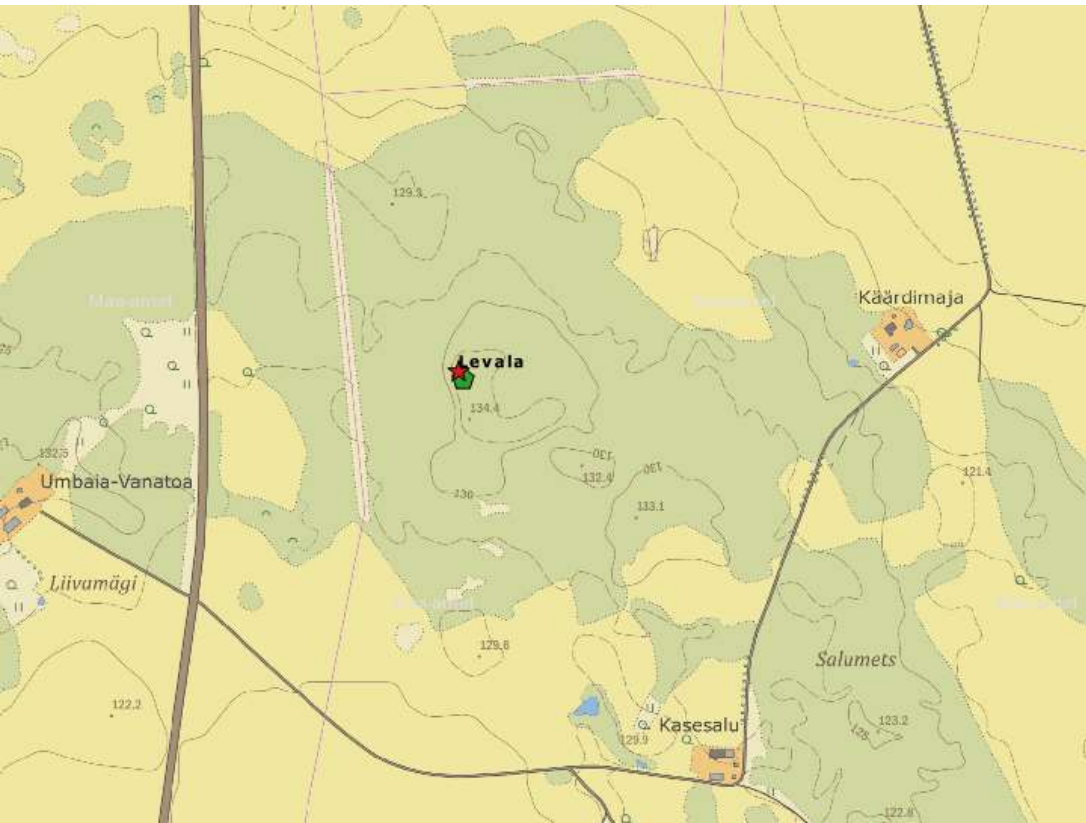
Struve's point is situated 1.6 m to the north from the known point *Varesemägi*



LEVALA

Lewala

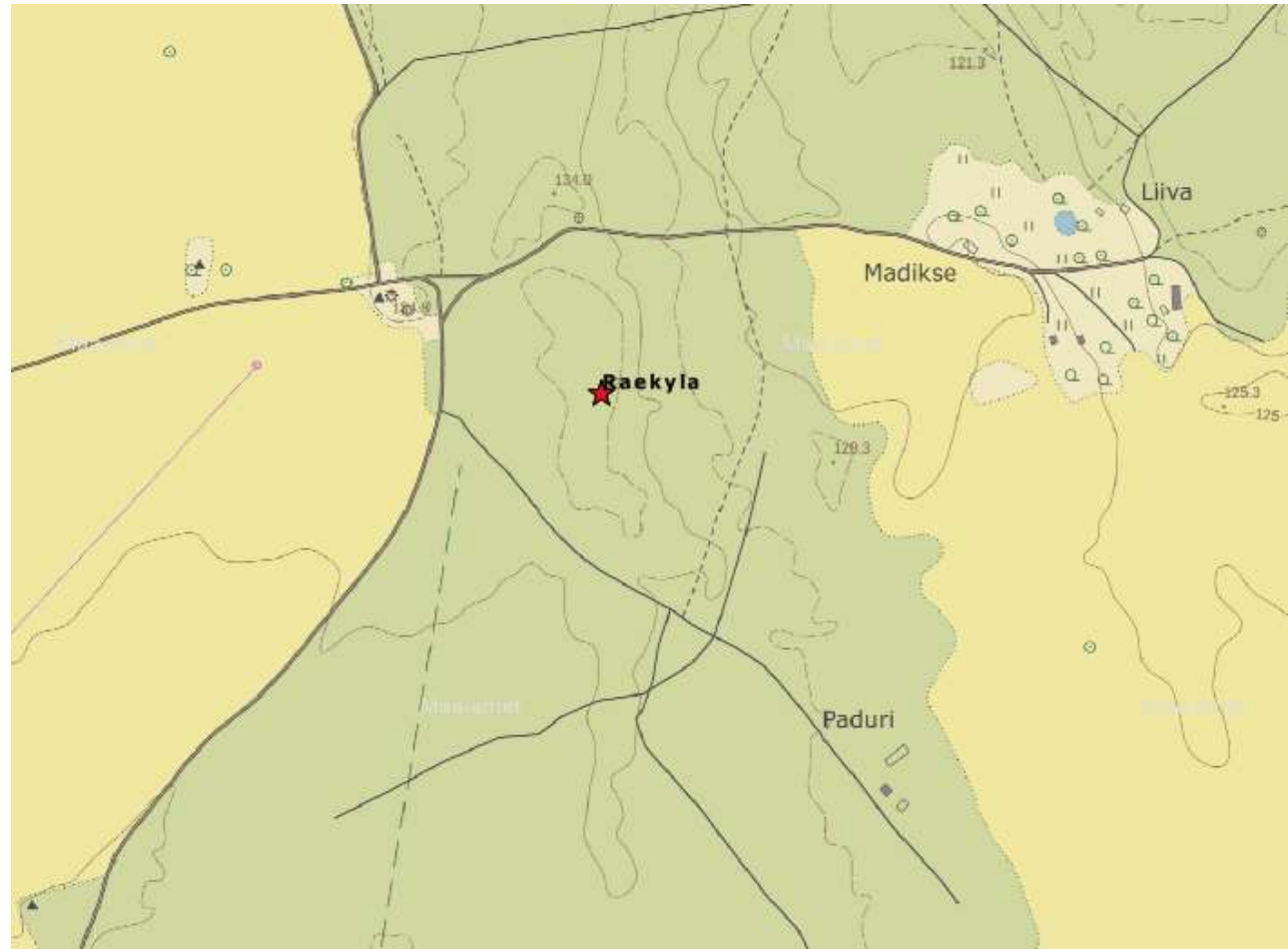
Struve's point is probably situated 13 m in NW direction from trigonometric point Levala



RAEKÜLA

Raeküll

No trigonometric points nearby



EBAVERE

Ebbafer

The triangulation point by the same name („*Ebavere*“) has been used in the Estonian geodetic networks in 1856, 1895 and 1931

Inspection in July 1991

Struve's point is situated 2.5 m in SE direction from the known point *Ebavere*



KOERU

Marien-Magdalen

The church was built probably at the end of the 13th century, the current shape of the tower and helmet are probably from the 18th century



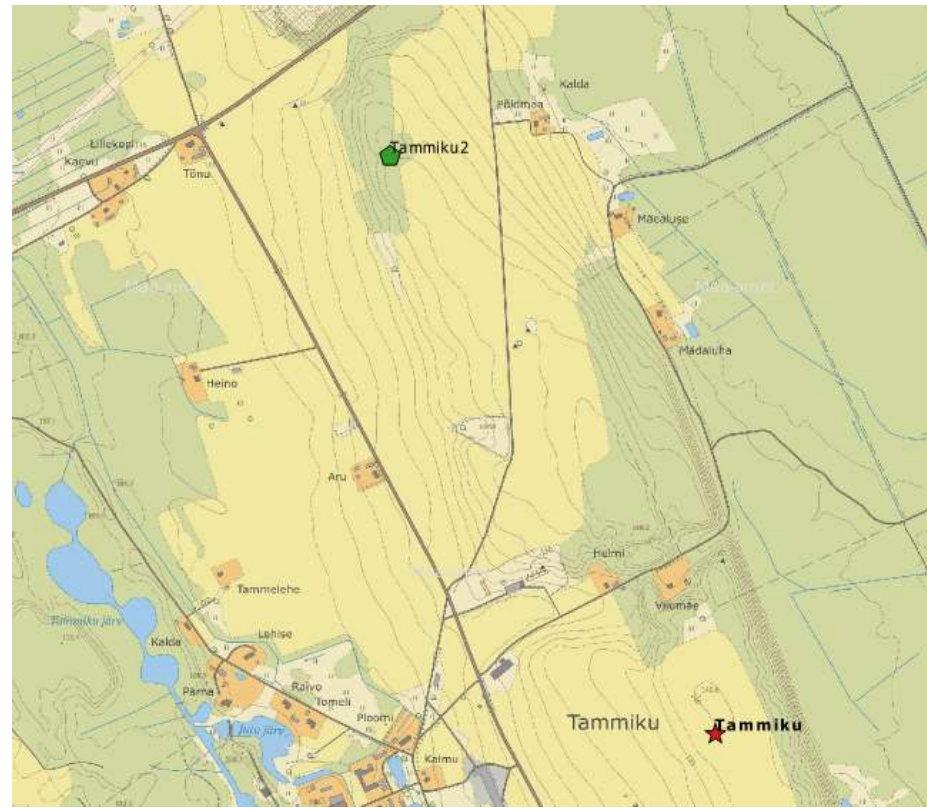
TAMMIKU

Tammik

The triangulation point by the same name („*Tammiku*“) was established in 1961

Struve's point is situated 840* m in SE direction from the known point *Tammiku*

*1500 m



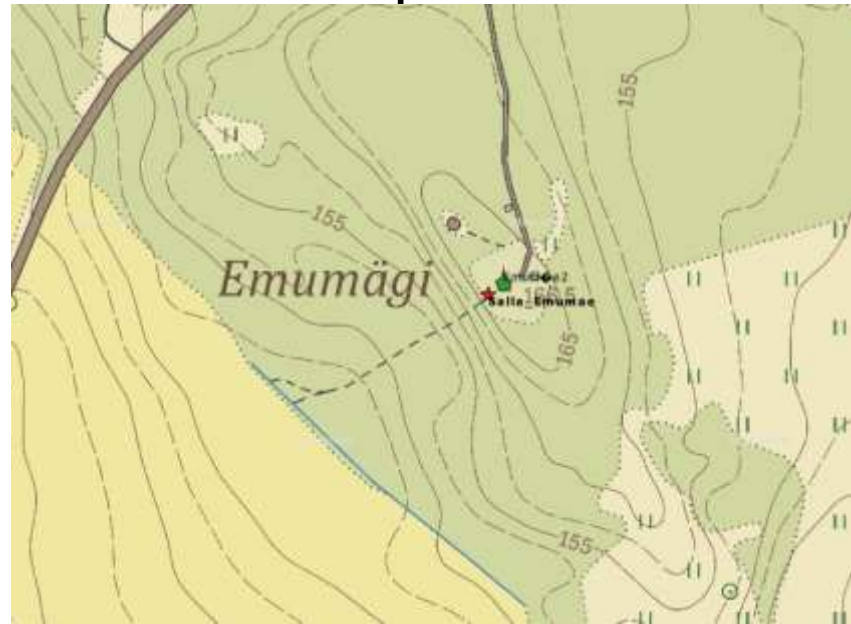
SALLA (EMUMÄGI)

Sall

The triangulation point by the same name („*Emumäe*“) has been used in the Estonian geodetic networks in 1899, 1931 and 1991

Inspection in July 1991

Struve's point is situated 14 m from the known point
Emumägi



PÕLTSAMAA

Oberpahlen

The Struve point was located at the observation tower.
Struve point was determined from the canopy's corner points

In the Second World War, the castle was destroyed, only the stone walls are preserved



Photo register.muinas.ee



Photo digar.ee

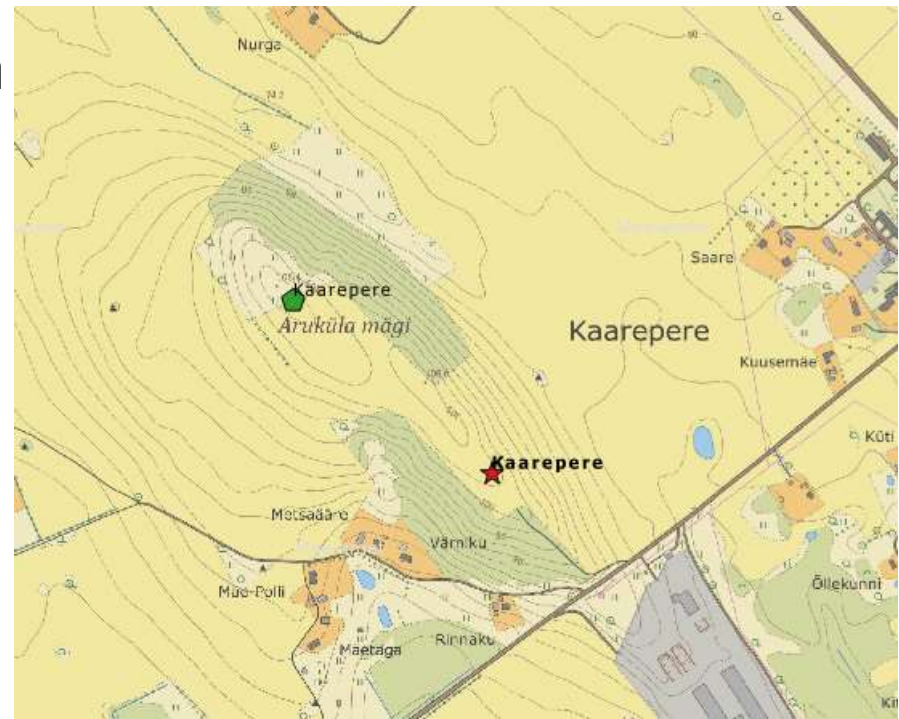
KAAREPERE

Kersel

The triangulation point by the same name („*Kaarepere*“) has been used in the Estonian geodetic networks in 1898, 1933 and 1991.

Inspection in June 1991

Struve's point is situated 437 m in SE direction from the known point *Kaarepere*



TARTU TÄHETORN

Dorpat



The Astronomy Observatory building was established in 1808-1810 at the ruins of the medieval bishopric castle at Toomemäe

It has remained in its original form, reconstruction in 2009-2010



Photos A. Tennus, 2011

HOLSTRE

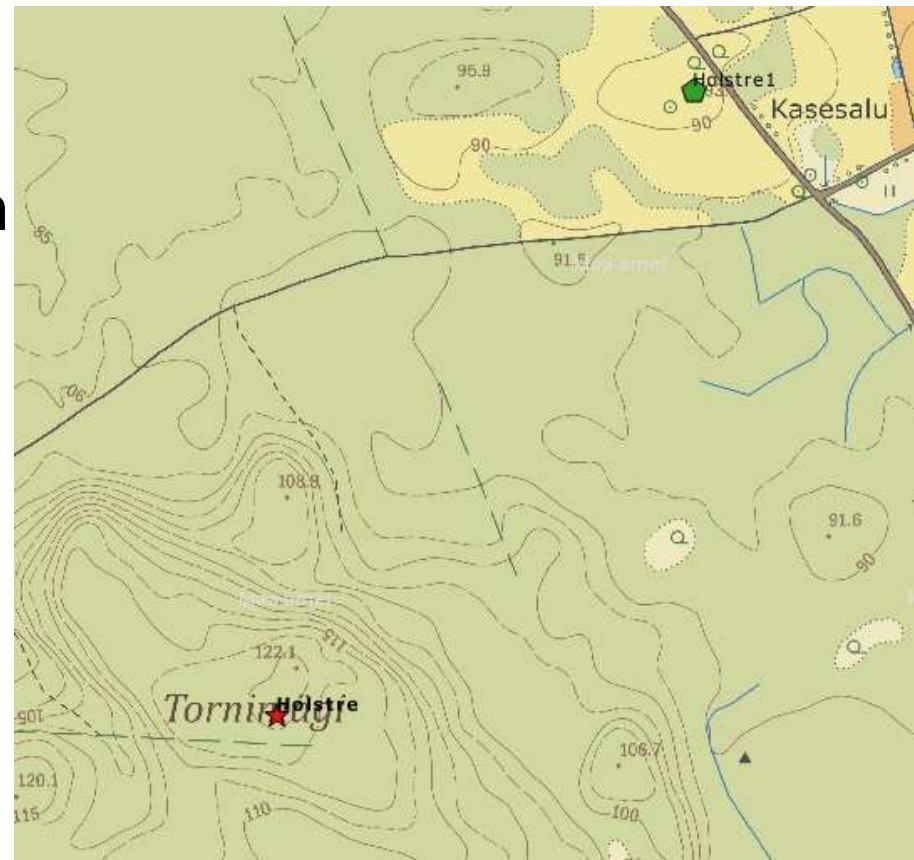
Holstfershof

The triangulation point by the same name („*Holstre*“) has been used in the Estonian geodetic networks in 1904, 1936 and 1991.

Inspection in July 1991

Struve's point is situated 65* m in SE direction from the known point *Holstre*

*650 m



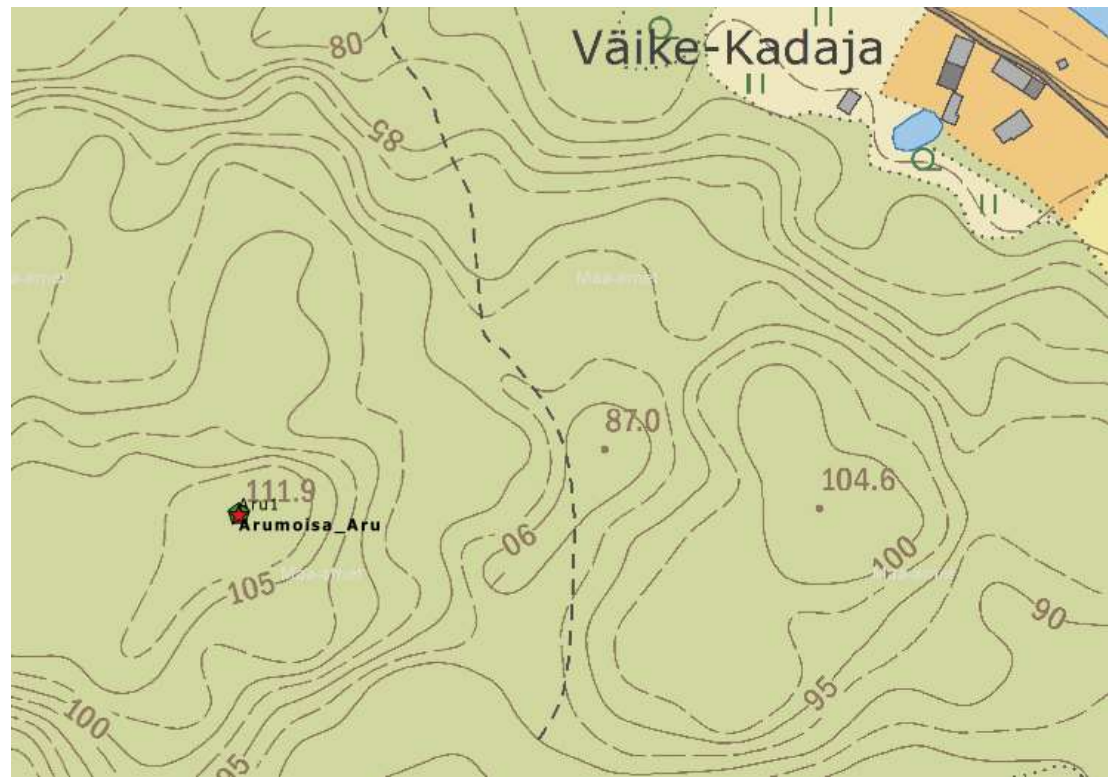
ARU

Arrohof

The triangulation point by the same name („*Aru*“) has been used in the Estonian geodetic networks in 1898, 1933 and 1991

Inspection in June 1991

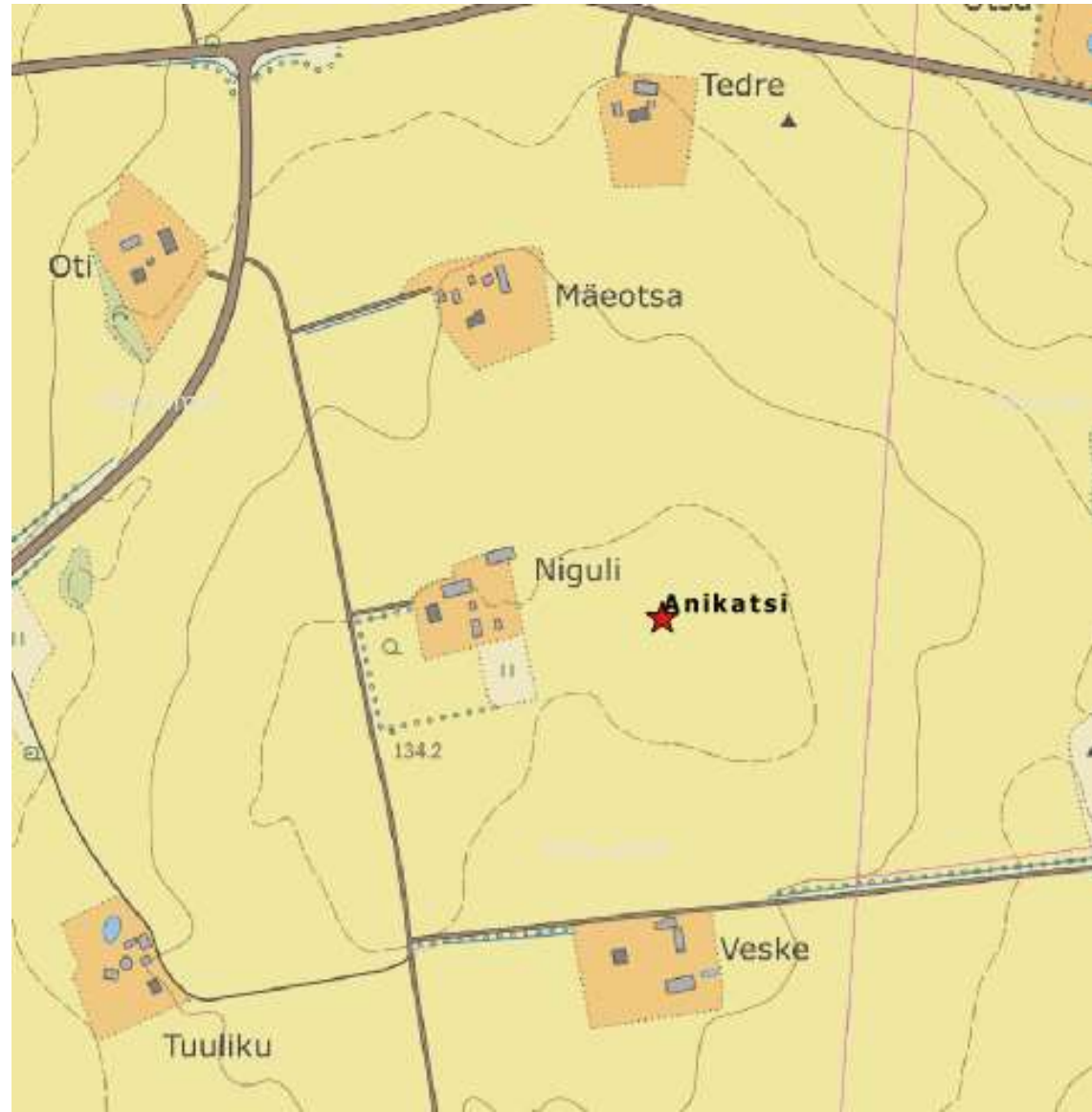
Struve's point is situated 0.8 m to the south from the known point *Aru*



ANIKATSI

Annikatz

No triangulation
points nearby



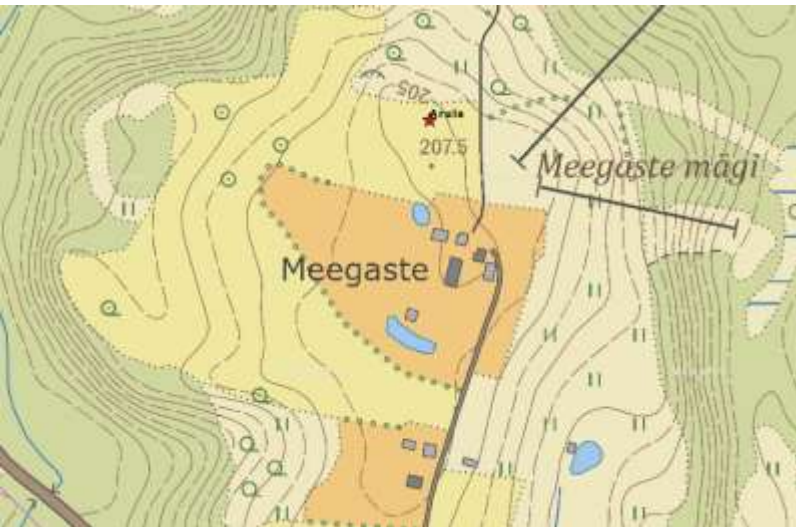
ARULA

Arrol

The triangulation point by the same name („*Arula*“) has been used in the Estonian geodetic networks in 1904 and 1933

Inspection in June 1991

Struve's point is situated 2366 m in the direction of NW from the known point *Arula*



HELME

Helmet

The church with the wooden tower was destroyed in the Second World War

Although the walls of the church are still existing, determination of the location of the Struve point is not possible



Photo H. Kala, 2016

HUMMULI

Hummelshof

The triangulation point by the same name („*Hummuli*“) has been used in the Estonian geodetic networks in 1903, 1933 and 1991

Inspection in June 1991

Struve's point is situated 1500 m in SW direction from the known point *Hummuli*

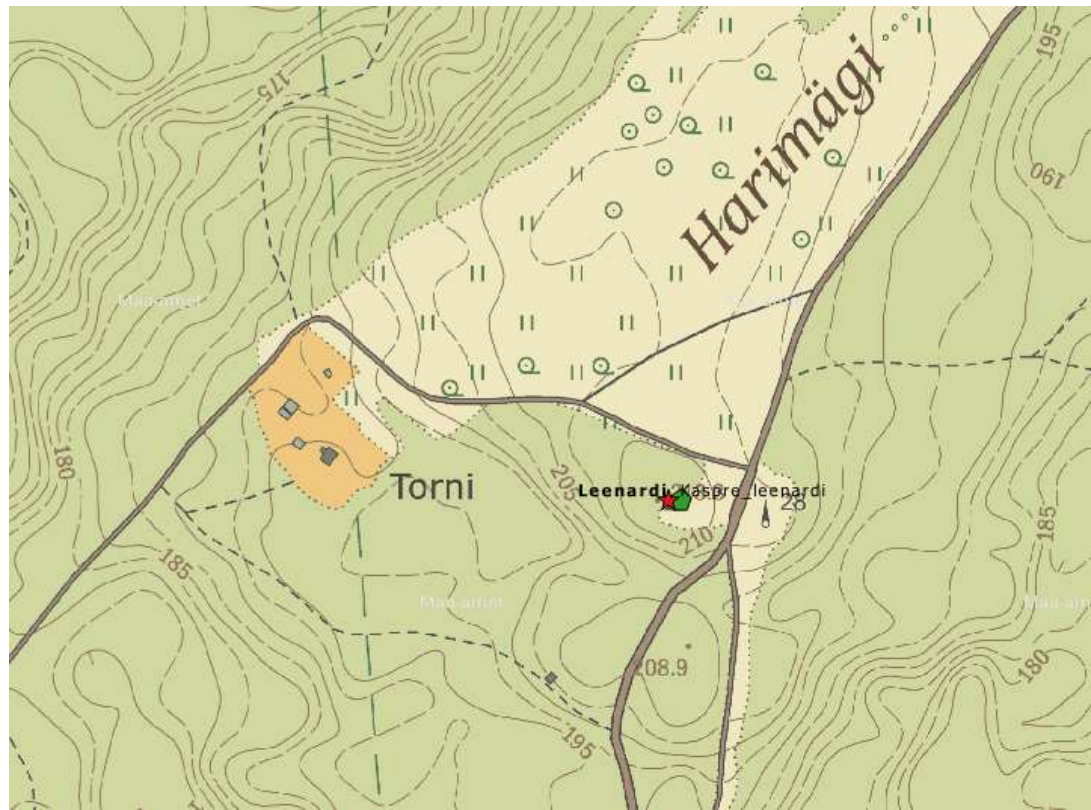


LEENARDI

Lenard

The triangulation point by the name „*Leenardi*“ has been in use in the Estonian geodetic network in 1936, 1961 and 1999, having names Harimägi (1936) and Kaspri (1961)

Struve's point is situated 8.9 m in direction of NO from the point *Kaspri*



ESSEMÄGI

Mariomäggi

The triangulation point by the same name („*Essemäe*“) has been used in the Estonian geodetic networks in 1933 and 1991

Inspection in June 1991

Struve's point is situated 6.3 m from the known point *Essemäe*



SIMUNA

Katko



In 1827, the end point was established from limestone foundation (204*204 m), rectangular granite block, where the center was marked as drilled hole

In 1849, the end point was marked with the granite block and conical granite pillar (1,7 m high) by F. Wrangell and F. Lütke

In 1870 Lieutenant Kortazzi, at the request of Otto Struve, carried out an inspection of the endpoint of Simuna, the endpoint was in good shape

Recognition in 1935 showed that the endpoint had survived in its former state.

In 1947 Želnin found the endpoint at its former state. Although he discovered that the granite block was not connected to the foundation.

In 2001 at the inspection by ELB, it was found that two granite monoliths established in 1849 have shifted from the site and the metal center of the lower block has disappeared, its location was marked by a hole about 2 cm in diameter.

VÕIVERE

Woibifer



In 1827, a center was established similarly to the endpoint of Simuna.

At the request of Otto Struve in the 1870 survey, Lieutenant Kortazzi found that the rectangular granite block was shifted from its original location

1935, by the resolution of the Baltic Geodesy Commission, A. Vuuk did not find the foundation of the endpoint and considered it destroyed.

In 1947, Želnin and Maasik searched the endpoint in Võivere. They found a 204 cm x 204 cm limestone foundation at the depth of 0,7 meters, but there was no granite block placed on it.

At that time, Zelnin thought that, due to weather conditions (the work ended in November 1827), the endpoint was not correctly closed, which could cause displacement and disappearance of the granite block.

In 1964, Želnin wrote that only the limestone foundation was preserved at the baseline's endpoint in Võivere.

In 2001 at the inspection by ELB the limestone foundation was found in Võivere, but the center was marked by the large granite stone.

However, it is known that during the war (1941) the centerpiece of the granite plate was still in place.

Remark

In 1871, after the inspection of the baseline endpoints, Otto Struve said:

” Endpoints, as they are marked now, could only be as historical documents to show approximate position, where the geodetic measurements in Russia began”





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Thank you!

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