IMAGE Meeting
Uppsala, Sweden, September 2019

Ground-based magnetometers in high latitudes, Yamal peninsula, Western Siberia

(http://forecast.izmiran.ru/en/index.php).

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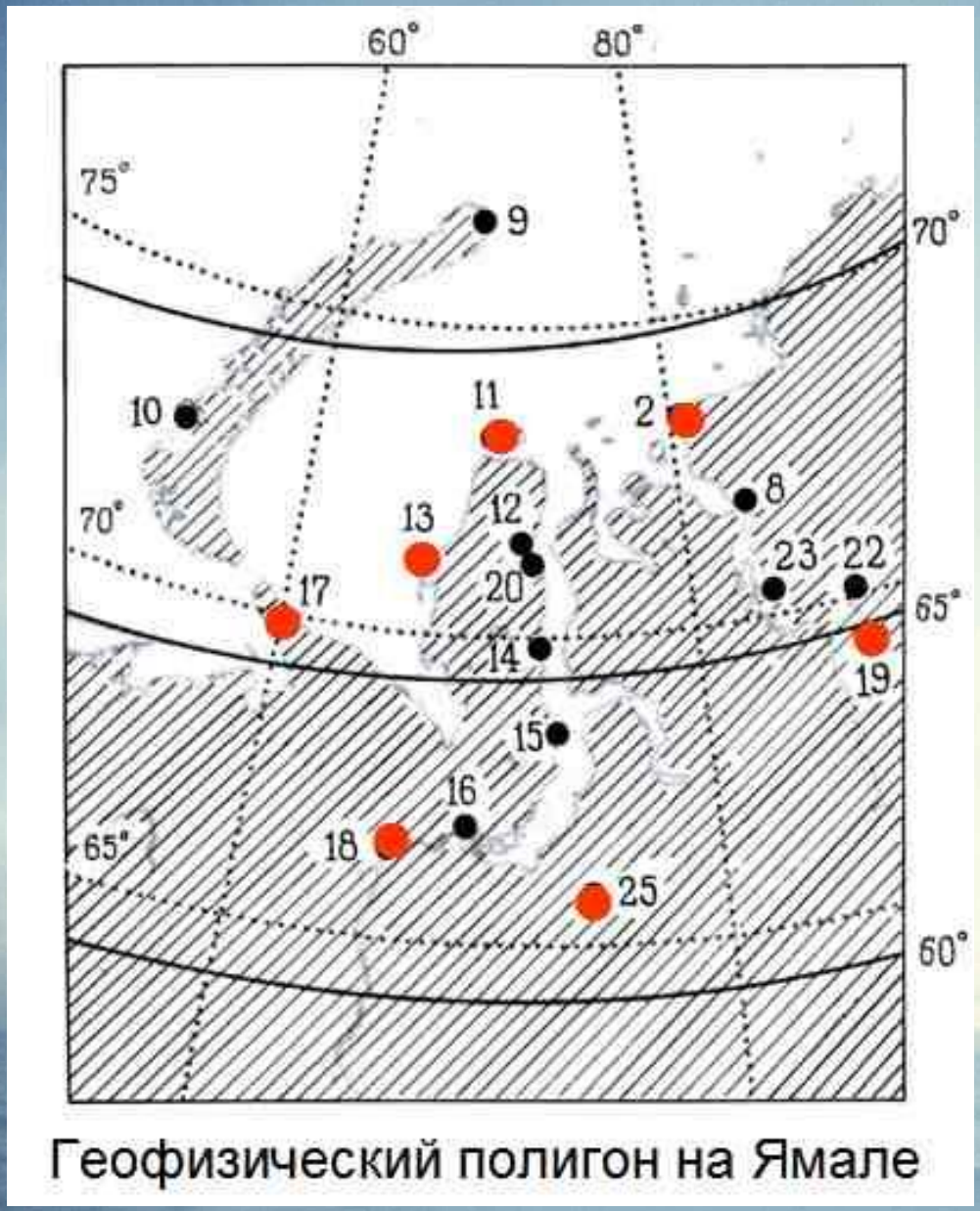
Presented by Ya.Sakharov, PGI

Infastructure of GAZPROM company

The key station to process the gaz flow before the main transport gaz lines (diameter 1450 cm, pressure 60 atm, Nord Stream 1 and 2) deliver gaz to Europe.

The standard drilling system in Yamal tundra



Геофизический полигон на Ямале

Network of magnetometers on Yamal peninsula is planned as Virtual Magnetic Observatory

Black dots show the sites which were in operation from 1972 to 1991, data available via WDC and via site www.cosmos.ru/magbbe

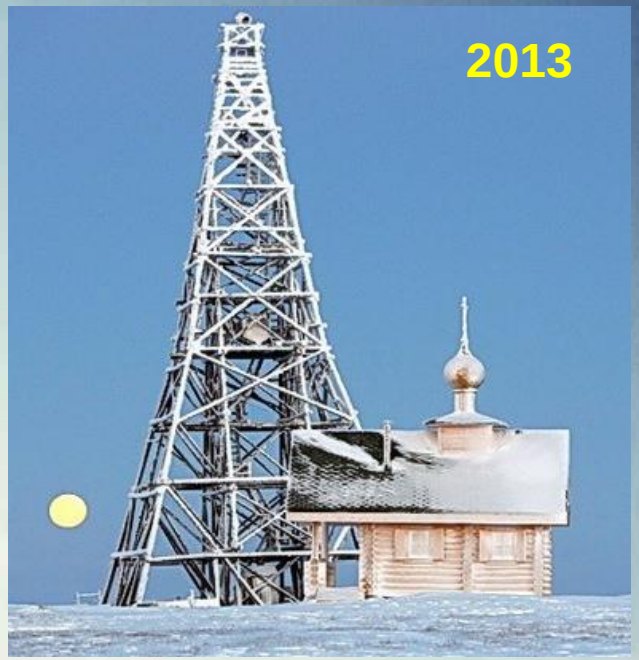
Red dots show the sites in operation now

17 – Amderma,
02 – Dixon,
11 - Belyi,
13 - Kharassovey,
19 – Norilsk,
18 – Salekhard,
25 – Nadym

Expected at 2019-2020 variational stations :

15 - Cape Kamennyi,
14 - Seykha,
20 - Sabetta,

Observatory on Belyi Island, # 11



The observatory on Belyi Island includes a complex of instruments such as seismic devices and atmosphere and ionosphere sensors:
2014 – meteo
2015 – magnetometer
2015 – GLONASS station
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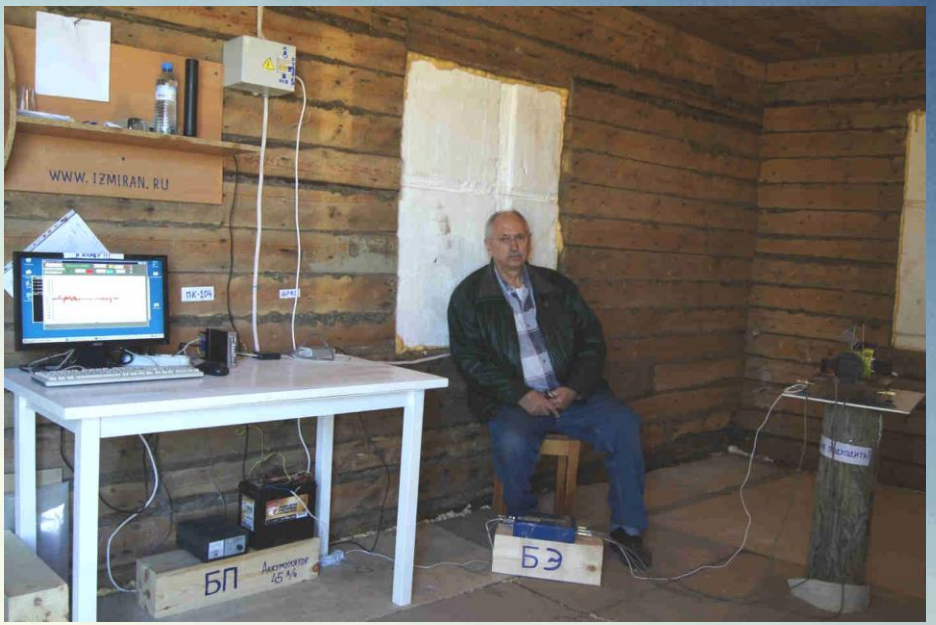
Kharassavey point № 13

opened at August 2013



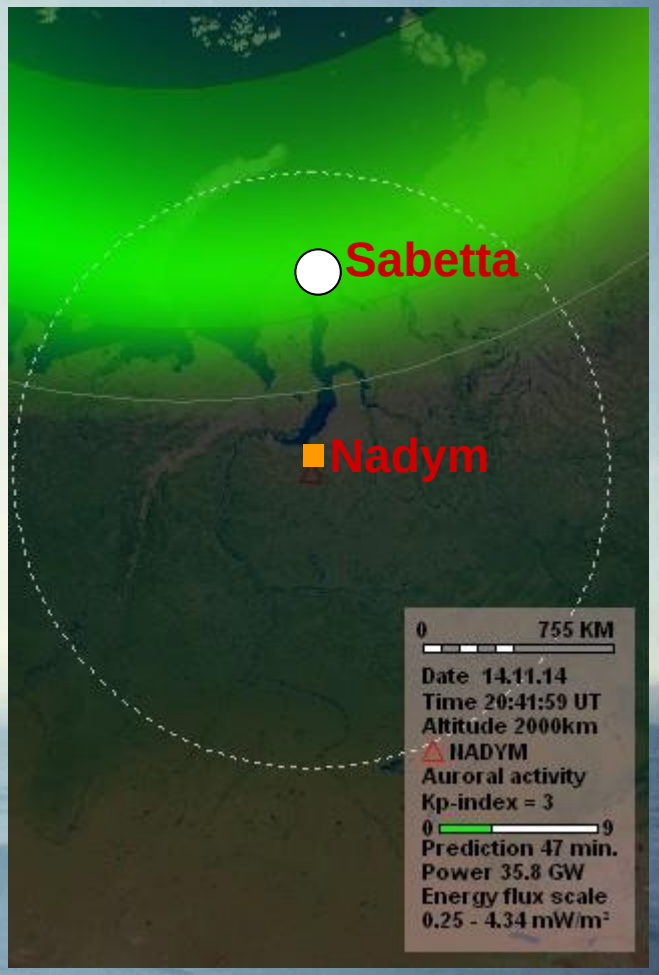
The position of magnetometer is 6 km away from main village. The quartz sensors is operate without special demands at temperatures from + 50 to - 40 C

The planned observatory in Sabetta № 20 on the map

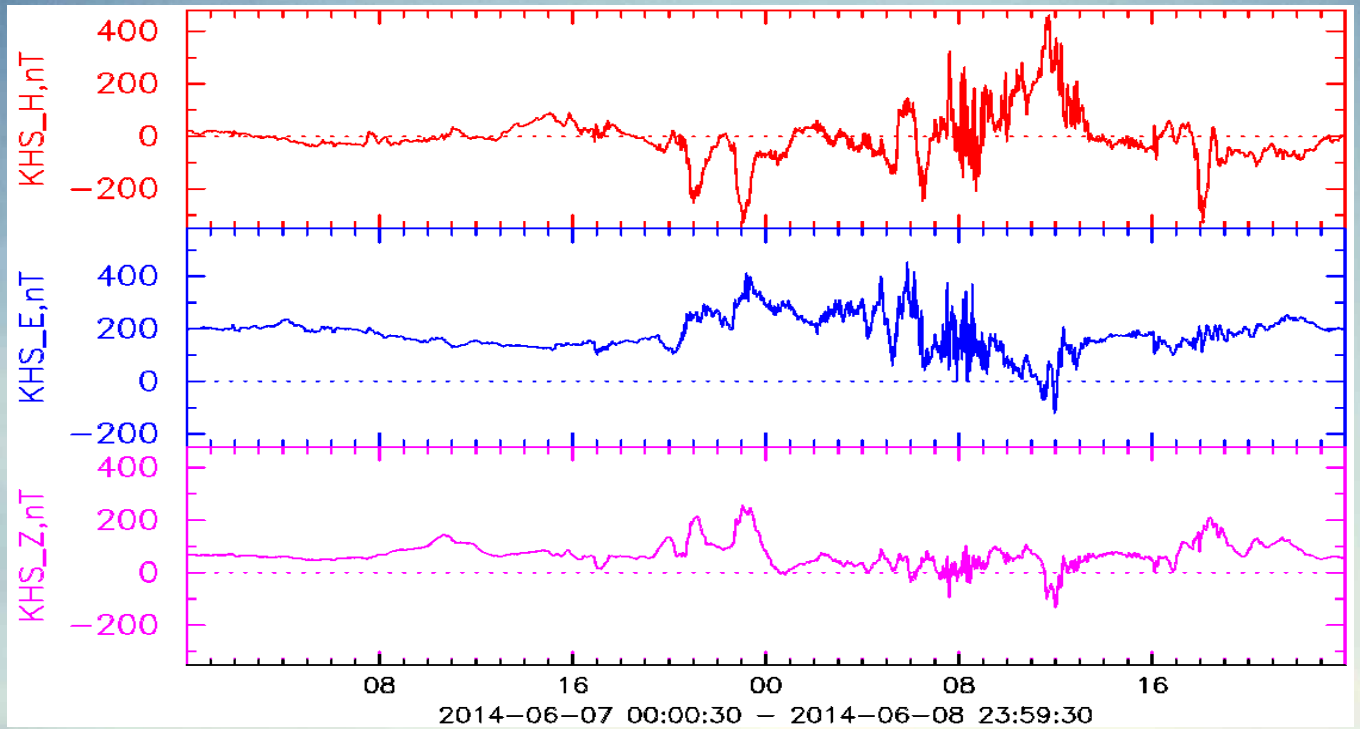
The magnetic observatory in Sabetta is to be built and equipped by Schlumberger similar to Dead Horse Observatory in Alaska

http://kho.unis.no/

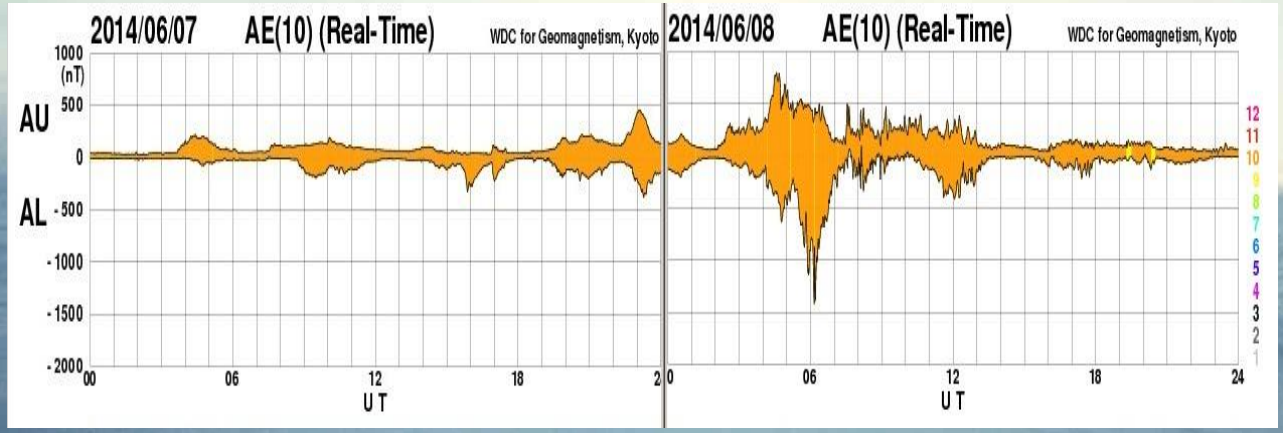
Yuzhno-Tambeyskoe gas condensate field



The sample of observations on Kharassovey # 13 magnetic storm at July, 07-08, 2014

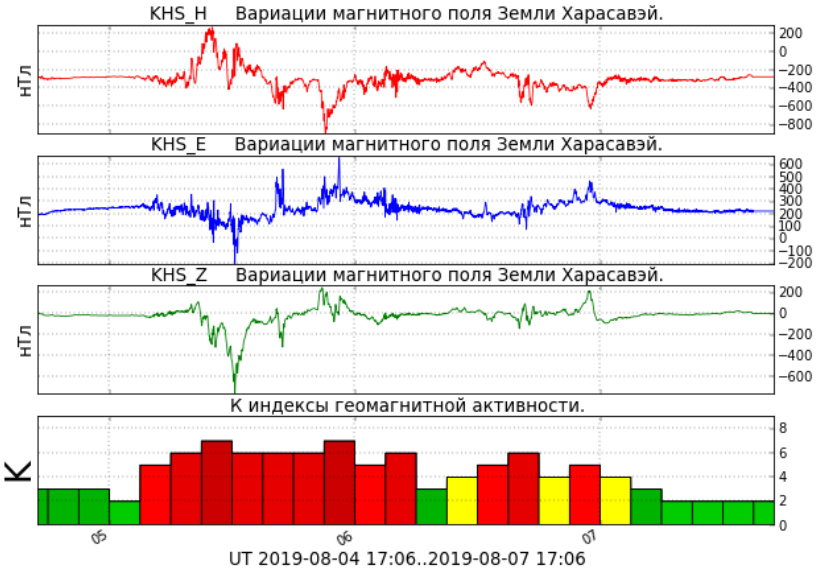


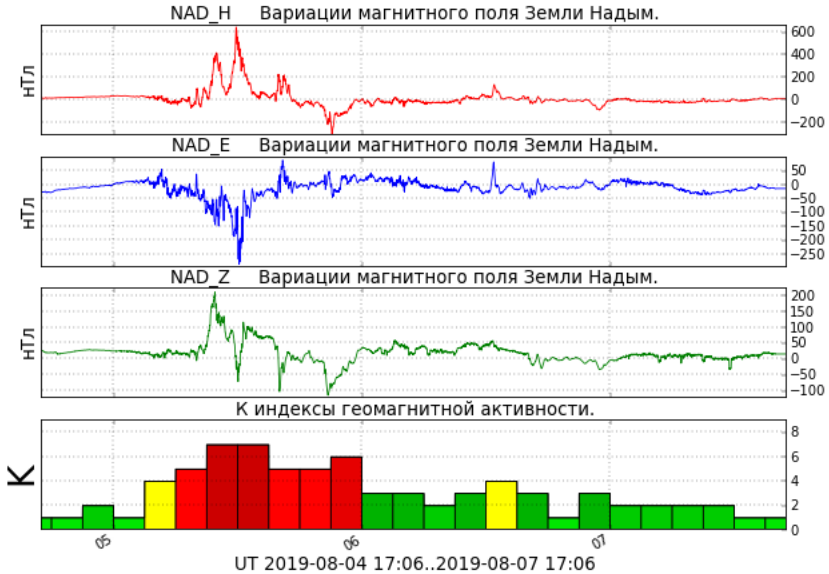
The flow of data is coming by Internet every 3 hours. The control procedure is once a week as requested by the drilling company on Kharassovey



Samples of magnetogrammes

Kharassovey # 25, August 04 - 07, 2019





Nadum # 25, August 04 - 07, 2019

Methods of analysis of ground-based geomagnetic data includes:

1. Comparison of amplitude, spatial, and temporal variations

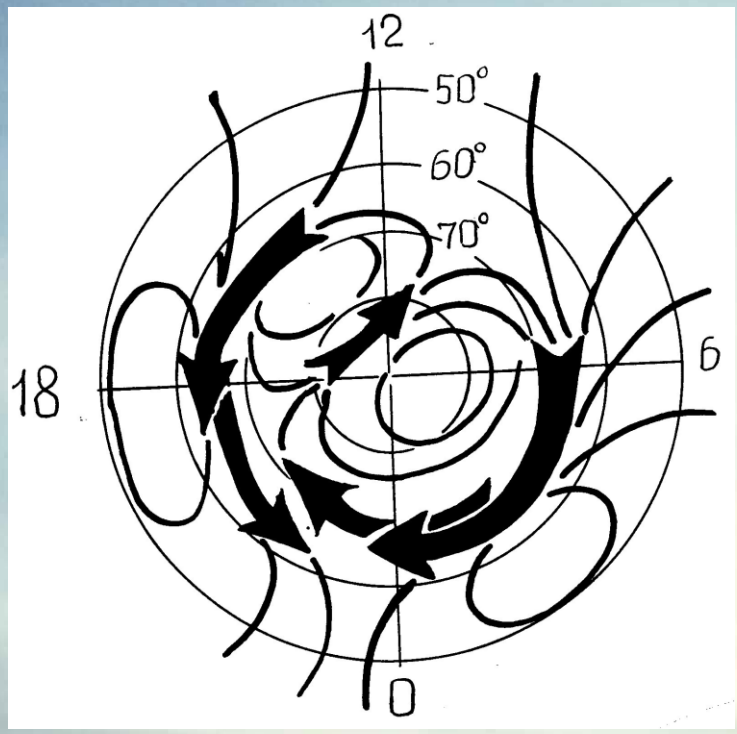
2. Study of distribution of magnetic field and equivalent currents

3. Special-temporal mapping (LT-UT graphs)

4. Spectral analysis, sonograms, and 3-D spectral images

5. Modelling and mapping of magnetic disturbances along field lines.

Summary and Tasks



The scheme of polar current system

- **Convective and burst like jets and polar cap currents**

The purpose of the **Yamal geophysical network** is to realize ground-based coordinated observations along one geomagnetic meridian and to demonstrate what sort of data to be used as a tool for high latitude geophysical research in connection with other instruments on the ground level and in space. In general, the tasks for contemporary study of high latitude geomagnetic phenomena can be categorised into five parts:

1 - to evaluate the quantitative distribution of variations for particular events connected with the three different types of currents which develope in high latitude ionosphere;

2 - to determine the features of low-latitude events of ionospheric and magnetospheric origin

3 - to develop new methods for analysis of ground-based data in the form of numerical models and computer simulation;

4 - to investigate the characteristics of individual events in the ionospheric currents along the 145° meridian consistent with satellite electromagnetic observations;

5 - to improve and/or define more precisely the physical models of ionospheric and magnetospheric currents which play the key role in connecting outer space and earth environment.

http://polar2014.yanao.ru/

Participants of Yamal Polar Geophysical Conference, April, 2014, Salekhard

Thank you for your attention!