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A satellite with solar panels and a gold-colored instrument package is shown in space. A bright beam of light emanates from the satellite, directed towards the Earth. The Earth is depicted with a blue ocean and yellowish-brown landmasses, showing a topographic or bathymetric map. The background is a dark space filled with stars.

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performed repeatedly until the very end of each individual operation. This is the root of the big difference between logistics in the stationary production of products and services, and logistics in the mobile. The construction of completely different buildings implies completely new challenges. The different conditions and response capabilities that the location of an object provides distinguish it too much from the others. Each situation that arises on the new object differs from the one resembling it from the previous one and requires a new creative approach. In this situation, the amount of statistical analysis increases many times over. For each object of its production of services, the logistics operator uses the methods of statistical assumption. The comparison of hypotheses and the testing of possibilities is performed every minute. An in-depth analysis of the potential for response should be made before any follow-up can be taken. It is necessary for each subsequent decision to be as close as possible to the goals. The similarity in the resulting unforeseen situations in a stationary production and the difficult to predict mobile one is only in the professionalism based on experience, on which response models have been accumulated. Following the comparison made so far, we must emphasize that the consequences of any unforeseen situation due to unverified information, leads to misjudgment and puts any organization at a standstill, regardless of whether it is a product or service.

The work of specialists in the field of technical activities in the field of construction and maintenance of building automated propulsion systems is very similar to that of specialists in the IT sector, but these are radically different areas, although difficult to distinguish for non-professionals. The work of building automated systems is a hardware activity, while the creation of a software product is entirely software work. As important as the mechanical assembly of a system, together with its electronic components, is as important as the program embedded in its control device. Without any of the components that make up the integrity of a modern technical system, today's progressive development in technology cannot be expected. With the same importance in relation to the development of a business is the information service, which allows the exchange of information in the various processes not to concern the location of the participants in them and makes it possible to synchronize them. In the absence of information services, the possibility of remote process control would be minimized and the efficiency of production would decrease in direct proportion to it. Thanks to the information channels that can be used to improve coordination, the effectiveness of the activities in a company increases.

In conclusion, it should be noted that engineering logistics professionals in the services sector need to be seen as highly qualified staff whose knowledge surpasses their counterparts in standard economic logistics in technical terms. Even if the dynamics of the use of information systems are similar, the direct look at the innovations related to building automation and the innovations in the software products that manage the functions of the facilities supporting the processes is incomparable. In order to maintain the level of awareness, the knowledge about the technique, as a material reality, and about the technologies of construction of an installation should be updated according to the innovations in the sector. This is extremely important for the progressive development of any practice guided by the service logistics engineer.

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PRESENTATION OF HORIZONTAL MOVEMENTS OF THE EARTH'S CRUST BY RESULTS OF GEODESIC MEASUREMENTS

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ABSTRACT: *The subject of the study is to present a modern model of local horizontal movements of the Earth's crust in a fault zone with appropriate accuracy and representativeness through the results of precise GNSS measurements on a geodynamic site to analysis and evaluation of modern local geodynamic processes occurring in fault zones.*

KEYWORDS: *fault zone, geodetic measurements, horizontal movements*

1. Introduction

Visual methods for interpreting the results of observations of horizontal movements of the earth's surface are primarily related to their clarity. In this way, the data are available for visual perception and understanding. Various methods are used to visualize geodynamic processes at present, with special attention paid to the balance between clarity and metricity of the image. The correlation of these properties is different, when using different visualization methods and this is determined by the choice of presentation method. The predominant role of clarity in the construction of visual models provides simple visual perception, geometric accuracy, practical significance, the possibility of its use in obtaining numerical solutions and results [1, 2, 3].

2. Experimental results and discussion

2.1. Results of repeated geodetic measurements.

The results were obtained from four consecutive cycles of precise geodetic measurements in the time between 27 - 29.10.2015, 27.04 - 05.05.2016, 28.05 - 01.06.2016 and 28.10 - 01.11.2016 year. The period between the first two cycles is six months, between the second and third is one month and between the third and fourth measurement cycle is five months. On 22.05.2016 an earthquake with a magnitude of $M = 4.3$ was registered according to the data of the Bulgarian

Academy of Sciences, and 12 minutes after the first quake, a second with magnitude $M = 3.2$ was registered. The results are shown in Table 1.

Table 1: Results of repeated geodetic measurements

GEODETTIC DATUM: IGb08 EPOCH: 2005.01.01 00:00:00			
(N34) I measurement 27-29.10.2015 y.			
№ point	X (m)	Y (m)	Hel (m)
1	2	3	4
17	4634545.860	678328.979	345.118
18	4634650.542	678284.243	337.786
19	4634745.369	678390.891	344.509
20	4634535.948	678524.450	345.611
(N34) II measurement 27.04-05.05.2016 y.			
17	4634545.855	678328.978	345.152
18	4634650.536	678284.243	337.824
19	4634745.382	678390.885	344.539
20	4634535.962	678524.444	345.679
(N34) III measurement 28.05-01.06.2016 y.			
17	4634545.855	678328.994	345.135
18	4634650.527	678284.239	337.790
19	4634745.387	678390.957	344.440
20	4634535.973	678524.516	345.531
(N34) IV measurement 28.10-01.11.2016 y.			
17	4634545.858	678328.982	345.121
18	4634650.544	678284.252	337.802
19	4634745.368	678390.891	344.486
20	4634535.941	678524.431	345.637

2.2. Graphic representation of modern movements of the earth's crust.

The actual horizontal movements of the points and the area deformations for the finite elements are visualized by 3D graphs separately for each period between measurements. There are two spatial coordinates (x, y) and the third (t)

is time. The displacement vectors of the points are multiplied by a suitable coefficient. The visualizations of the following figures.

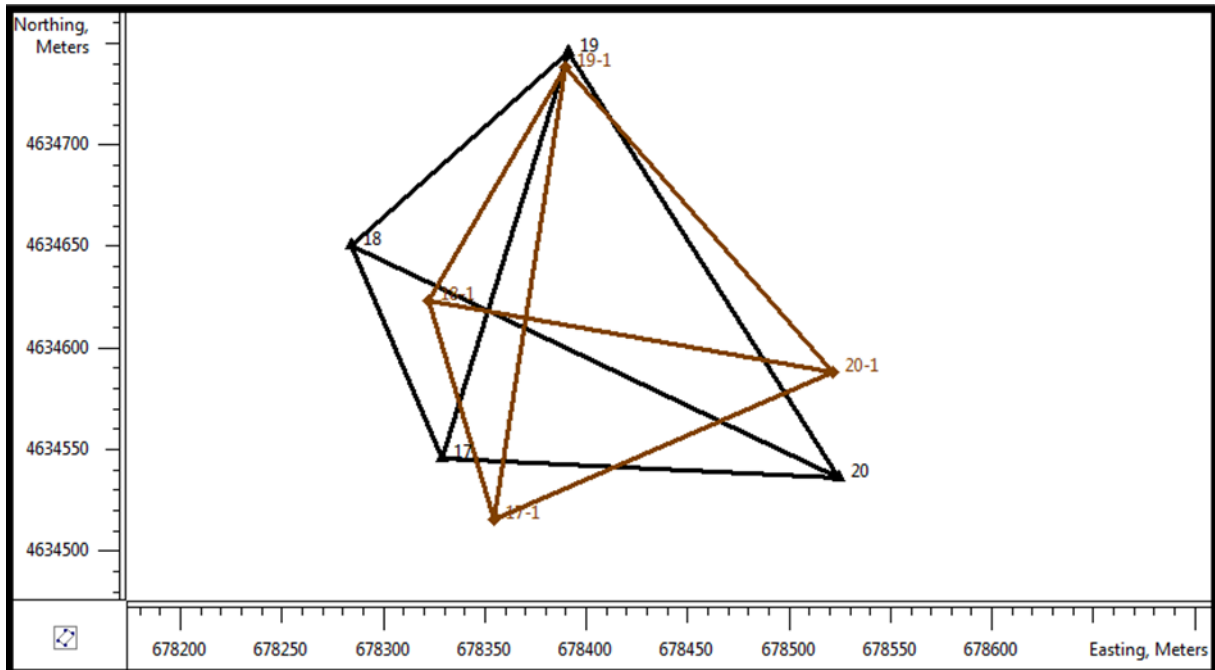


Fig.1. Deformations of the final elements of measurement 1-2

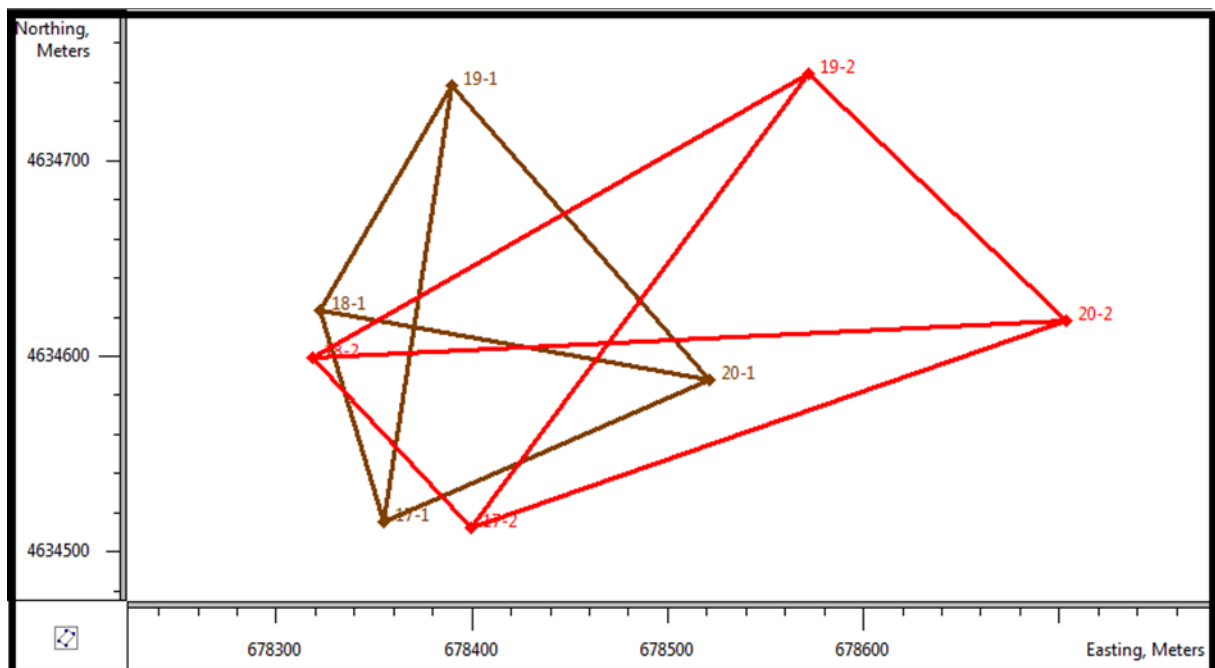


Fig.2. Deformations of the finite elements of measurement 2-3

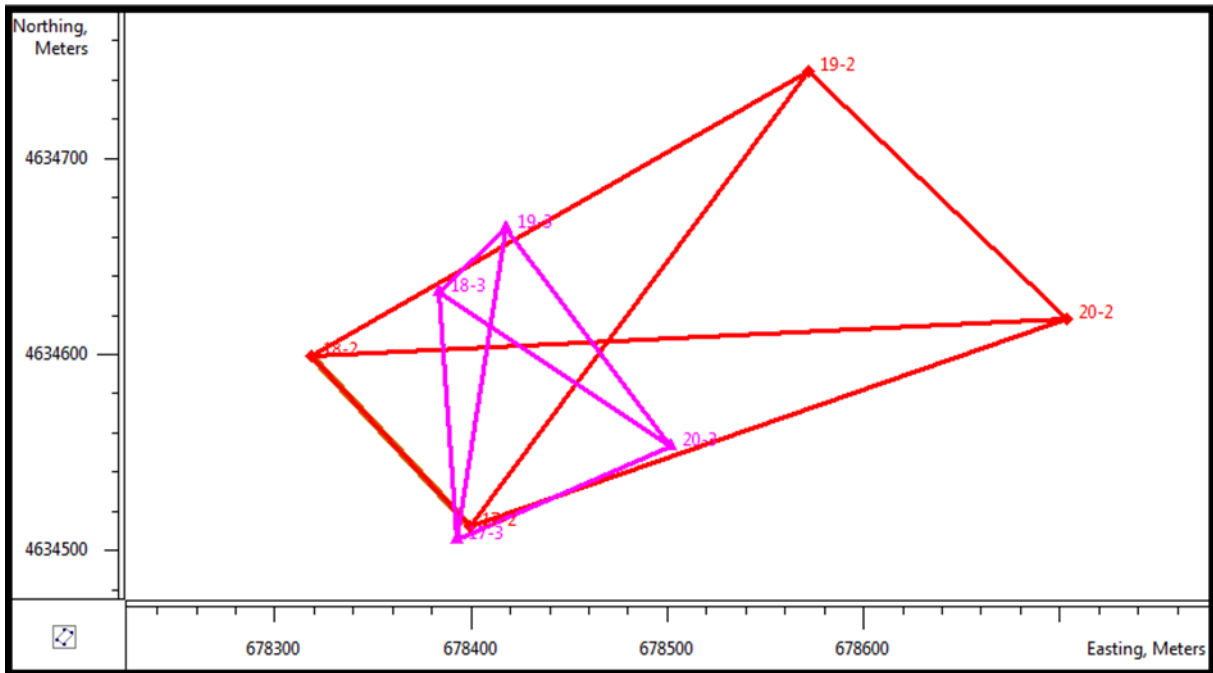


Fig.3. Deformations of the final elements from measurement 3-4

The analysis of the movements performed by the points shows that during an earthquake the accumulated stress due to the relative movements is released and they return to their original position.

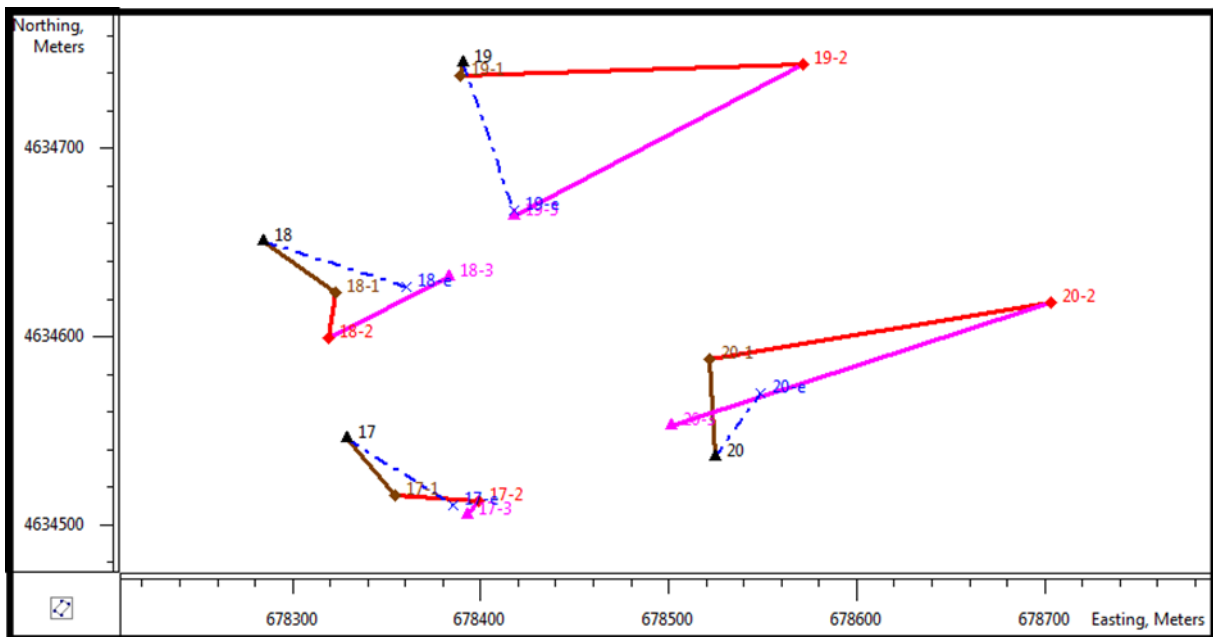


Fig.4. Vectors of point motion

The combined stage movement of all the measurement cycles is shown in Figure 4 represented by solid lines and the annual movement of the points of the calculated tectonic pattern of movements by dotted line.

3. Conclusion

The GNSS measurements made allow to build an up-to-date model of local horizontal movements for the research area. The manifested non-linearity in the behavior of local geodynamic processes determines the complexity of solving the problem of their study, as well as the study of natural and technical geodynamic objects of different scales. The conducted researches prove the existence of small blocks performing their own movements caused by local geodynamic processes, which have a continuous influence on the geodetic measurements and networks.

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OPTIMAL GEOPOTENTIAL MODELS OF THE EARTH'S GRAVITATIONAL FIELD FOR THE TERRITORY OF SOUTH- WESTERN BULGARIA - RILA MOUNTAIN

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ABSTRACT: *The subject of the study is to correctly select the most appropriate geopotential models of the Earth's gravitational field for the study area in order to make a more reliable assessment of the accuracy of local modelling of the geoid for the territory of Rila mountain.*

KEYWORDS: *Earth's gravitational field, Global gravity field model (GGM), accuracy assessment, EGM 2008, EIGEN-6C4.*

1. Introduction

Global models of the Earth's gravitational field are needed in solving various problems of space geodesy, geodynamics, geophysics, the theory of the figure of the Earth and others. Global geopotential models (GGMs) describe the Earth's gravitational field.

The GGMs data contain a limited set of dimensionless normalized harmonic coefficients that make it possible to calculate approximately the different functions of the Earth's gravitational potential in outer space. One of the main criteria for the effectiveness of these models is their accuracy, which in turn depends on the errors in determining the harmonic coefficients and the limited degree of spherical harmonics [1, 2].

For the purposes of the study, a comparison is made between the calculated height of the geoid $N_{GNSS/levelling}$ at 46 121 points with

