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GRAVIMETRIC RESEARCH PLANNING WORKS CARRIED OUT WITHIN THE FRAMEWORK OF THE CREATION OF A WATER RESERVOIR ON THE HAKARI RIVER OF LACHIN DISTRICT

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ABSTRACT

Although there are more than 140 reservoirs in the territory of the Republic, the demand for irrigation and drinking water in the Republic is not fully met. Therefore, the creation of new water reservoirs is one of the most urgent problems in the state program.

After the victory of the Patriotic War in Karabakh, as in other regions, the creation of the necessary infrastructure and the restoration of basic communications are successfully carried out in the Lachine region. In addition to these works, the "Hakarichay" water reservoir in Lachine region is also one of the successful projects.

To ensure the normal operation of the water reservoir with a capacity of approximately 90 million cub meters, which will be built on the Hakari River in Lachine region, to assess the ecological-seismic risks of the area, to determine the areas where environmental risks may occur and to take preventive measures is the main goal.

Key words: seismic risks, environmental risks, Khakarichay reservoir

LAÇIN RAYONU HƏKƏRİ ÇAYI ÜZƏRİNDƏ SU ANBARININ YARADILMASI ÇƏRÇİVƏSİNDƏ APARILMIŞ QRAVIMETRIK TƏDQİQAT PLANALMA İŞLƏRİ

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XÜLASƏ

Respublika ərazisində 140-dan çox su anbarı olsa da, Respublikada suvarma və içməli suya olan tələbat tam ödənilmir. Ona görə də dövlət proqramında yeni su anbarlarının yaradılması ən aktual problemlərdən biridir.

Qarabağda Vətən müharibəsi qələbə ilə başa çatdıqdan sonra, digər rayonlarda olduğu kimi Laçın rayonunda da zəruri infrastrukturun yaradılması, əsas kommunikasiyaların bərpası tədbirləri uğurla həyata keçirilir. Bu işlərlə yanaşı Laçın rayonu ərazisində "Həkəriçay" su anbarı da uğurlu layihələrdən biridir.

Laçın rayonunda Həkəri çayı üzərində tikiləcək, tutumu təxminən 90 milyon kubmetr olan su anbarının gələcəkdə normal fəaliyyətini təmin etmək, ərazinin ekoloji-seysmik risklərininn qiymətləndirilməsi, sürüşmə, uçqun və s., ekoloji risklərin baş verə biləcəyi sahələrin müəyyən edilməsi və qabaqlayıcı tədbirlərin görülməsi qarşıya qoyulmuş əsas məqsəddir.

Açar sözlər: seysmik risklər, ekoloji risklər, Xəkəriçay su anbarı

В РАМКАХ СОЗДАНИЯ ВОДОХРАНИЛИЩА НА РЕКЕ ХАКАРИ ЛАЧИНСКОГО РАЙОНА ВЫПОЛНЯЮТСЯ ГРАВИМЕТРИЧЕСКИЕ ИССЛЕДОВАТЕЛЬСКИЕ ПЛАНИРОВОЧНЫЕ РАБОТЫ

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АННОТАЦИЯ

Хотя на территории республики имеется более 140 водоемов, потребность в оросительной и питьевой воде в республике удовлетворяется не полностью. Поэтому создание новых водохранилищ является одной из самых актуальных задач государственной программы.

После победы в Отечественной войне в Карабахе, как и в других регионах, в Лачинском районе успешно осуществляется создание необходимой инфраструктуры и восстановление

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основных коммуникаций. Помимо этих работ, одним из успешных проектов является водохранилище «Хакаричай» в Лачинском районе.

Обеспечить нормальную работу водохранилища емкостью около 90 миллионов кубометров, которое будет построено на реке Хакари в Лачинском районе, оценить эколого-сейсмические риски территории, определить зоны, где возможны экологические риски, и принятие профилактических мер является основной целью.

Ключевые слова: сейсмические риски, экологические риски, водохранилище «Хакаричай»

For this purpose, within the framework of the "Creation of Reservoir on the Hakari River" project, gravimetric research and planning works were carried out together with complex engineering-geological works in the territory of Lachine region. From the orohydrographic point of view, the area is a harsh nature, complex relief, steep slopes with ravines, and a complex geological-tectonic structure. The geomorphological features of the area to be worked on, forest, thicket, heather, ravine, etc. a network of profiles consisting of measuring points was established taking into account impassable places (Fig. 1.). Research work was carried out in order to determine the relative gravity of the gravity field and probable stress dynamics by determining the exact coordinates and height above sea level in the profiles. Isoanomalous two-dimensional (2D) maps, cross-sections and three-dimensional (3D) models were prepared, reflecting the gravity field stress and depth dynamics in the areas, characterizing the change of this geodynamic stress, using the gravimetric prospecting method.

The obtained data allowed monitoring of tectonic disturbances at different depth intervals in the area and assessment of the geodynamic regime of the area. Gravimetric observations in the area where the Hakari water reservoir will be built in Lachine district were carried out by operators on foot at selected points on a special network, using a high-precision gravimeter device of the Canadian CG-5 AutoGrav brand (Fig 2.).

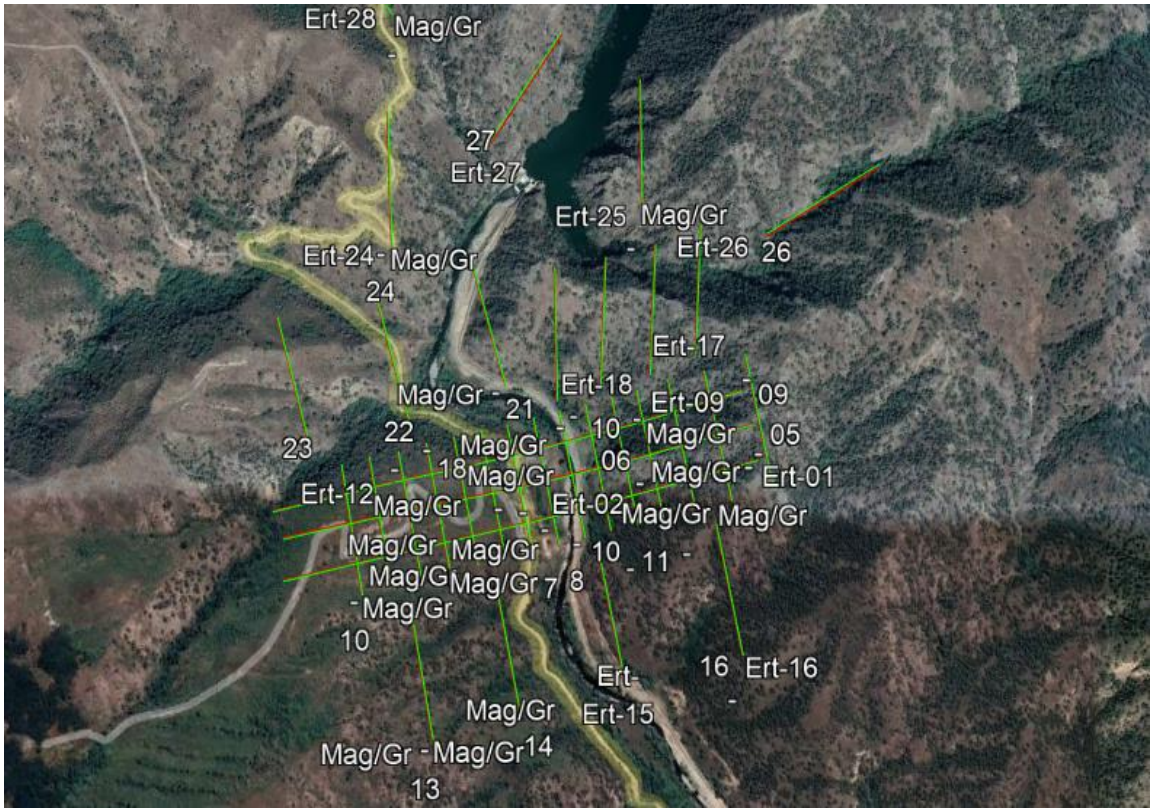


Figure 1. Profile network of gravimetric research works to be carried out in the area where the Hakari reservoir will be built in Lachine region.

In the area where the Hakari water reservoir will be built in Lachin district, it was carried out by the method of repeated measurement at the observation and reference points indicated in the scheme of research works (Fig 3). The data of the measurement works are processed with modern methods and programs.

Gravimetric measurements were carried out on 50 profiles, the distance between measurement points was 30 meters, and the total volume of observations was 235.

Figure 2. View of the Canadian-made CG-5 AutoGrav gravimeter under investigation.

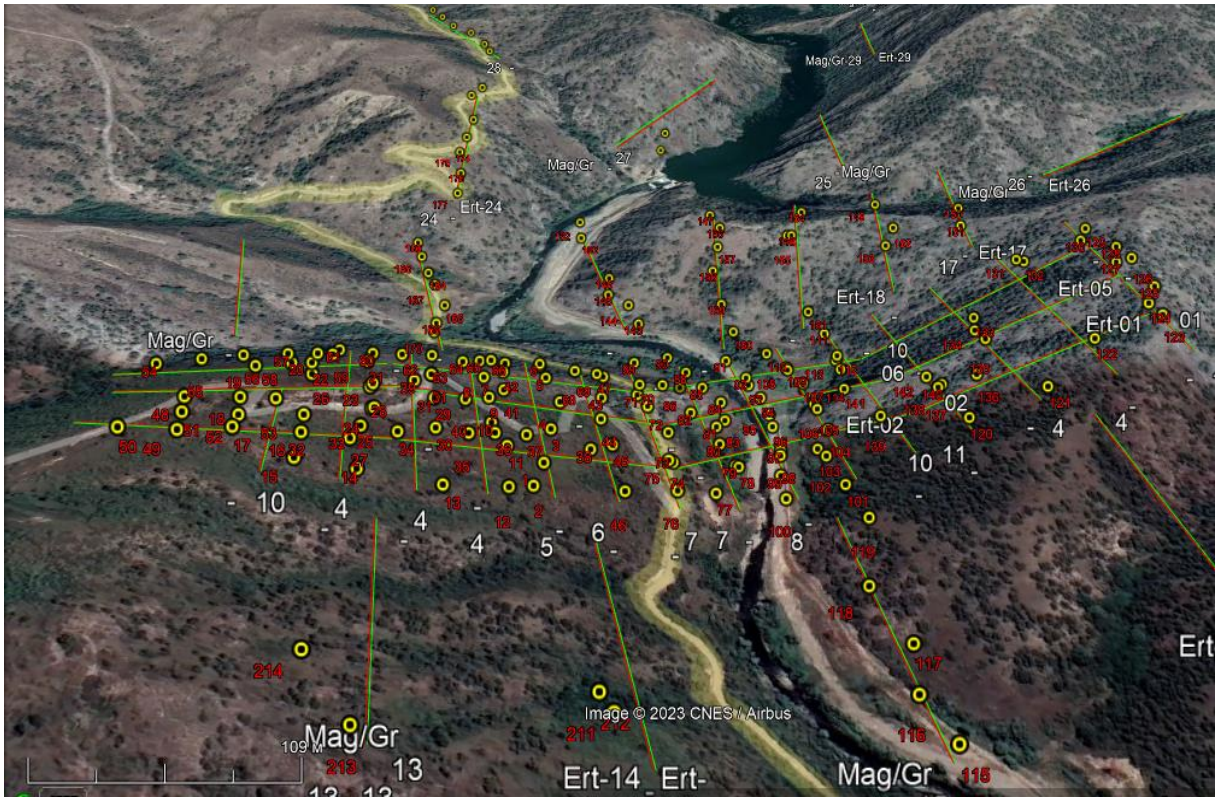
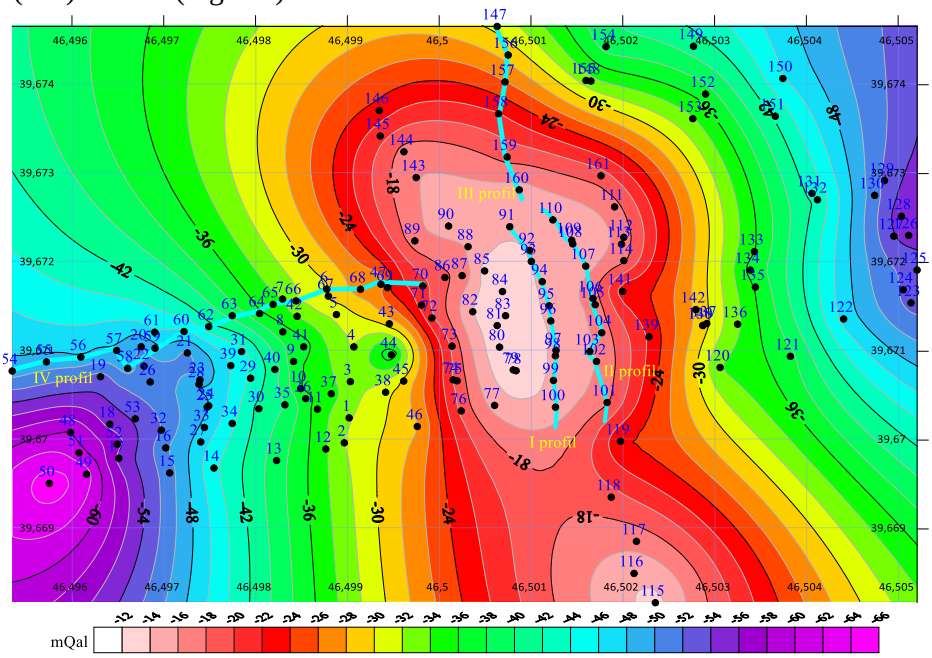
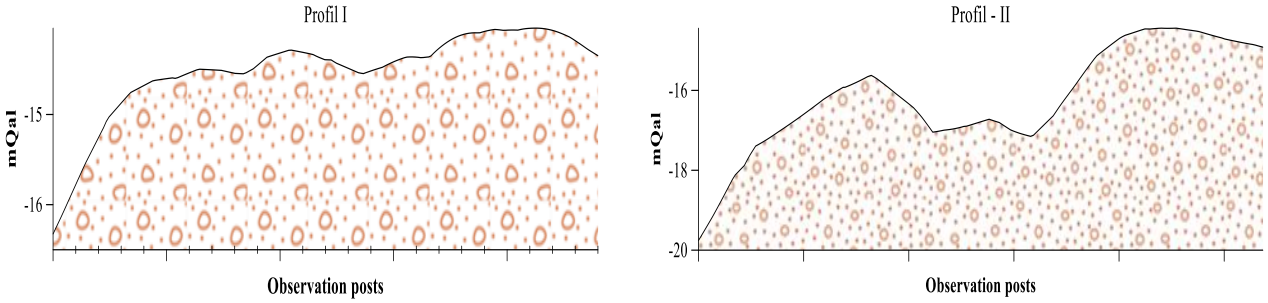


Figure 3. Location scheme of the gravimetric observation points performed in the area where the Hakari reservoir will be built in Lachine region.

Changes in the gravity field on each profile in the area of the water reservoir to be built on the Hakari River in Lachin region and the cross-sections of the gravity field according to the relief according to the calculation results (pictures 4-8), 2-dimensional (2D) isoanomaly map (picture 9) and 3-dimensional (3D) models (Fig. 10.) were constructed.





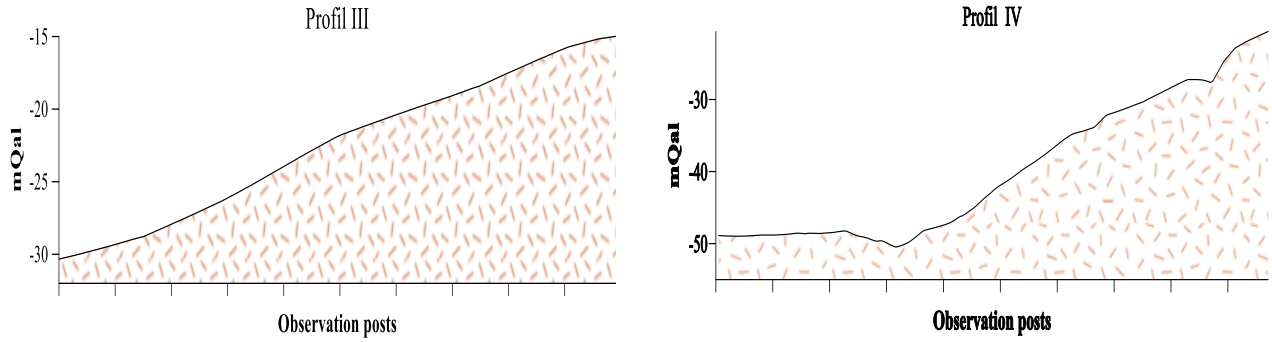


Figure 4. Sections on the profiles according to the isoanomaly map of the gravity field reflecting the stress-strain state in the reservoir area on the Hakari River.

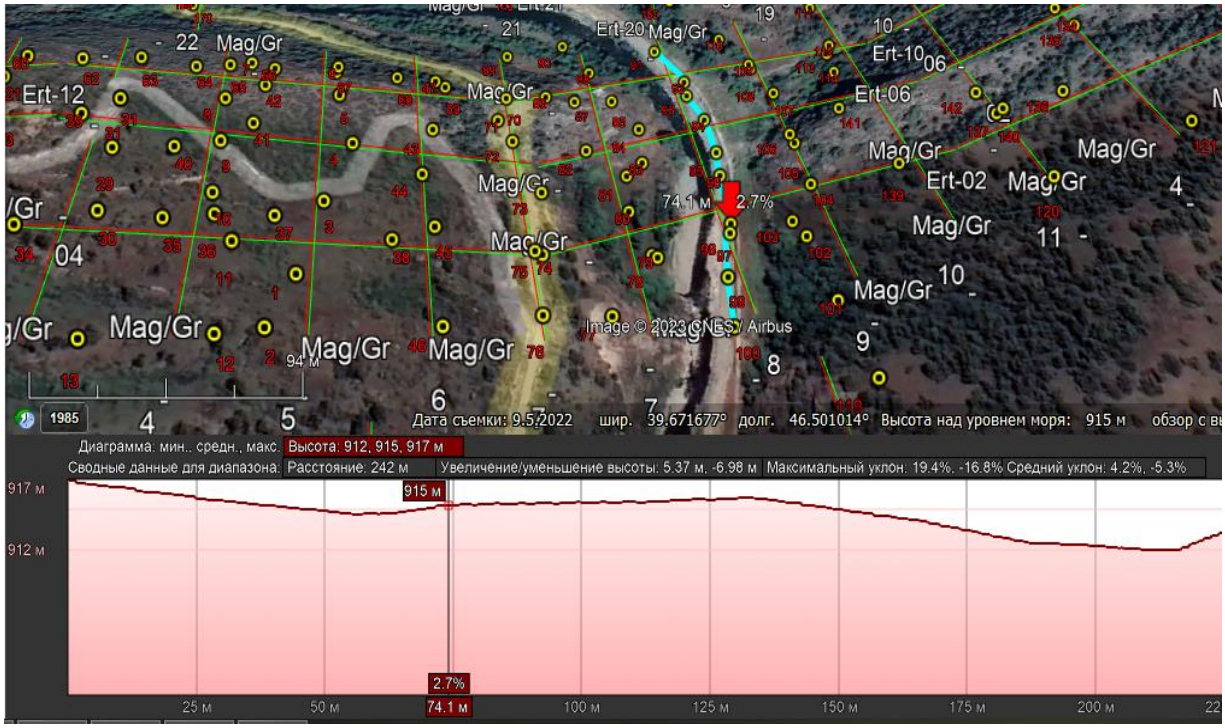


Figure 5. Cross-sectional diagram of profile I, where gravimetric observation points are located.

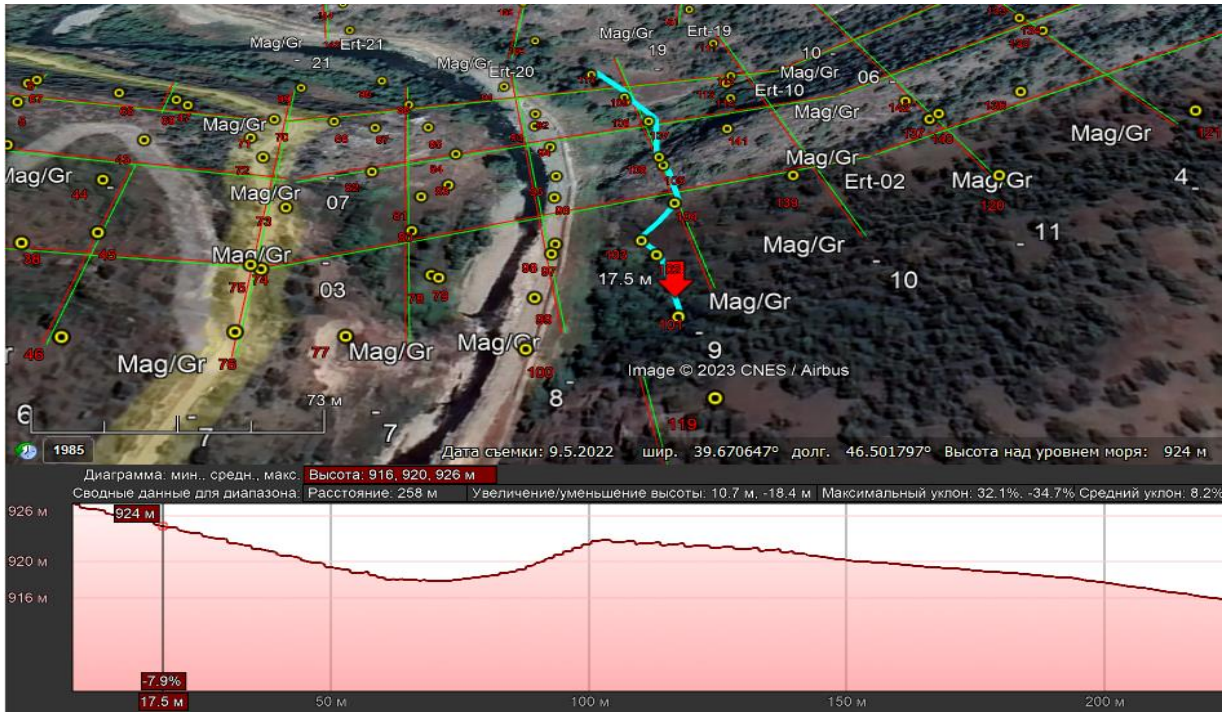


Figure 6. Relief section scheme of profile II, where gravimetric observation points are located.

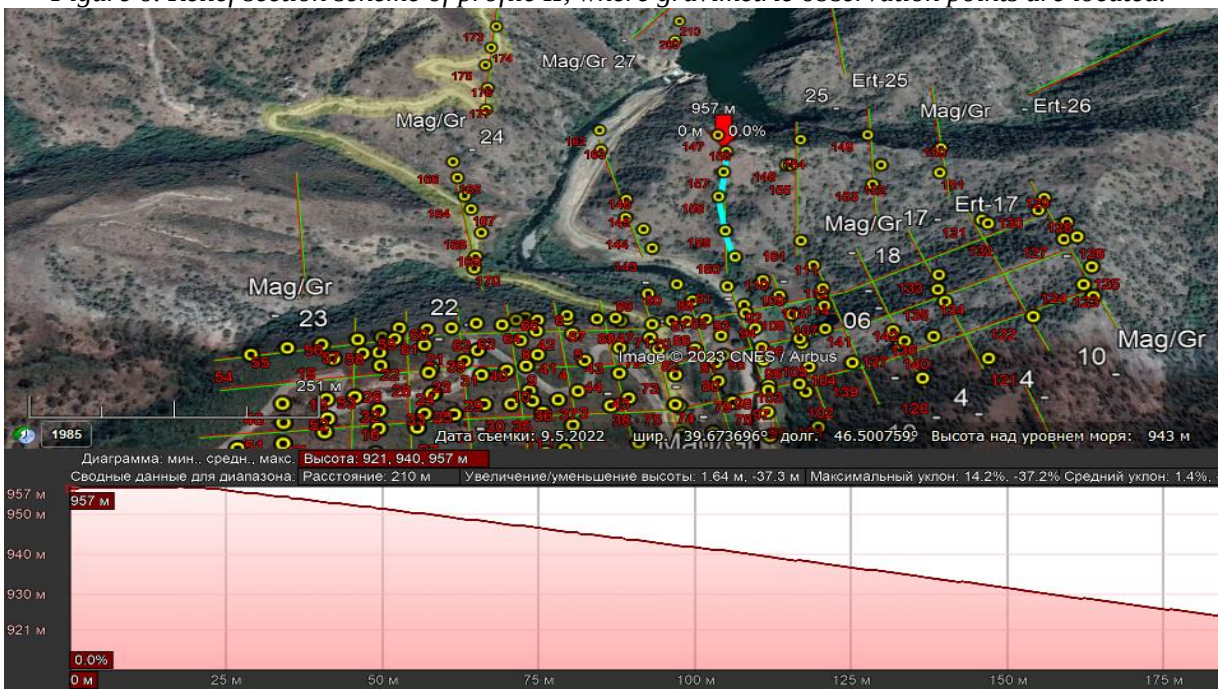


Figure 7. Cross-sectional diagram of profile III, where gravimetric observation points are located.

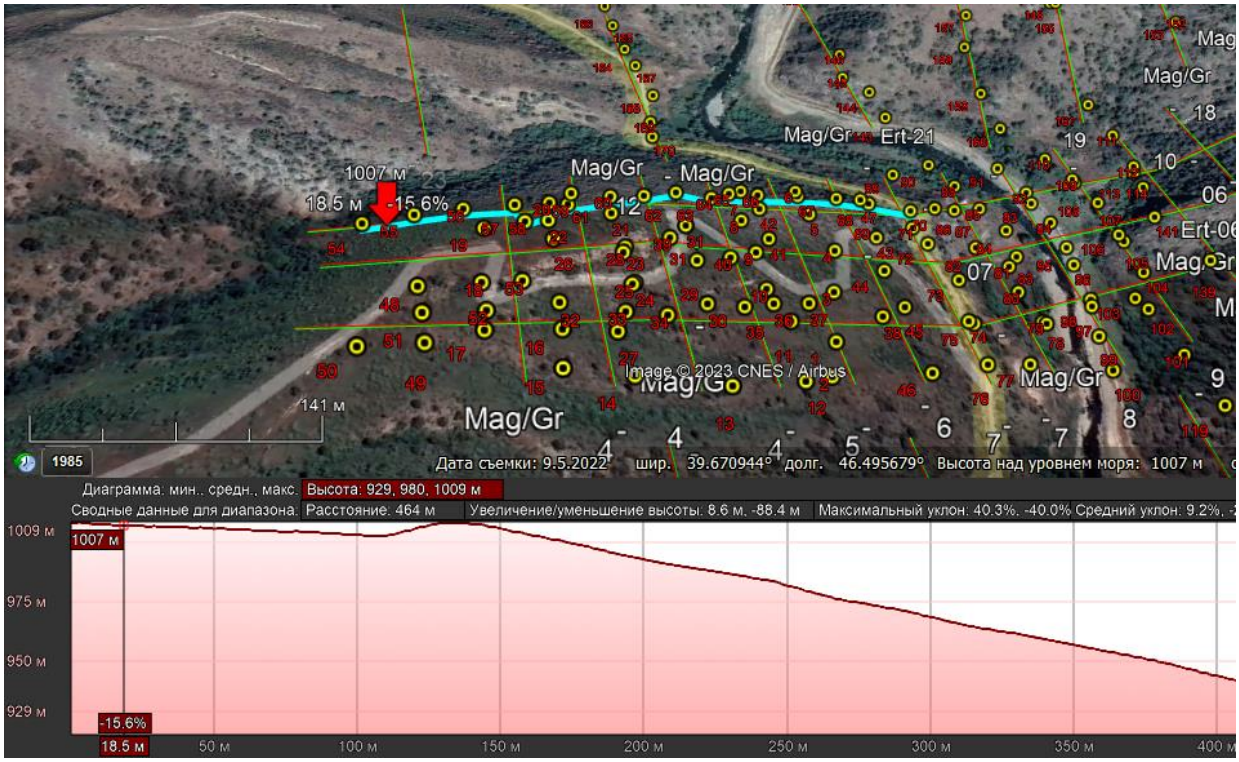


Figure 8. Relief cross-section scheme of profile III, where gravimetric observation points are located.

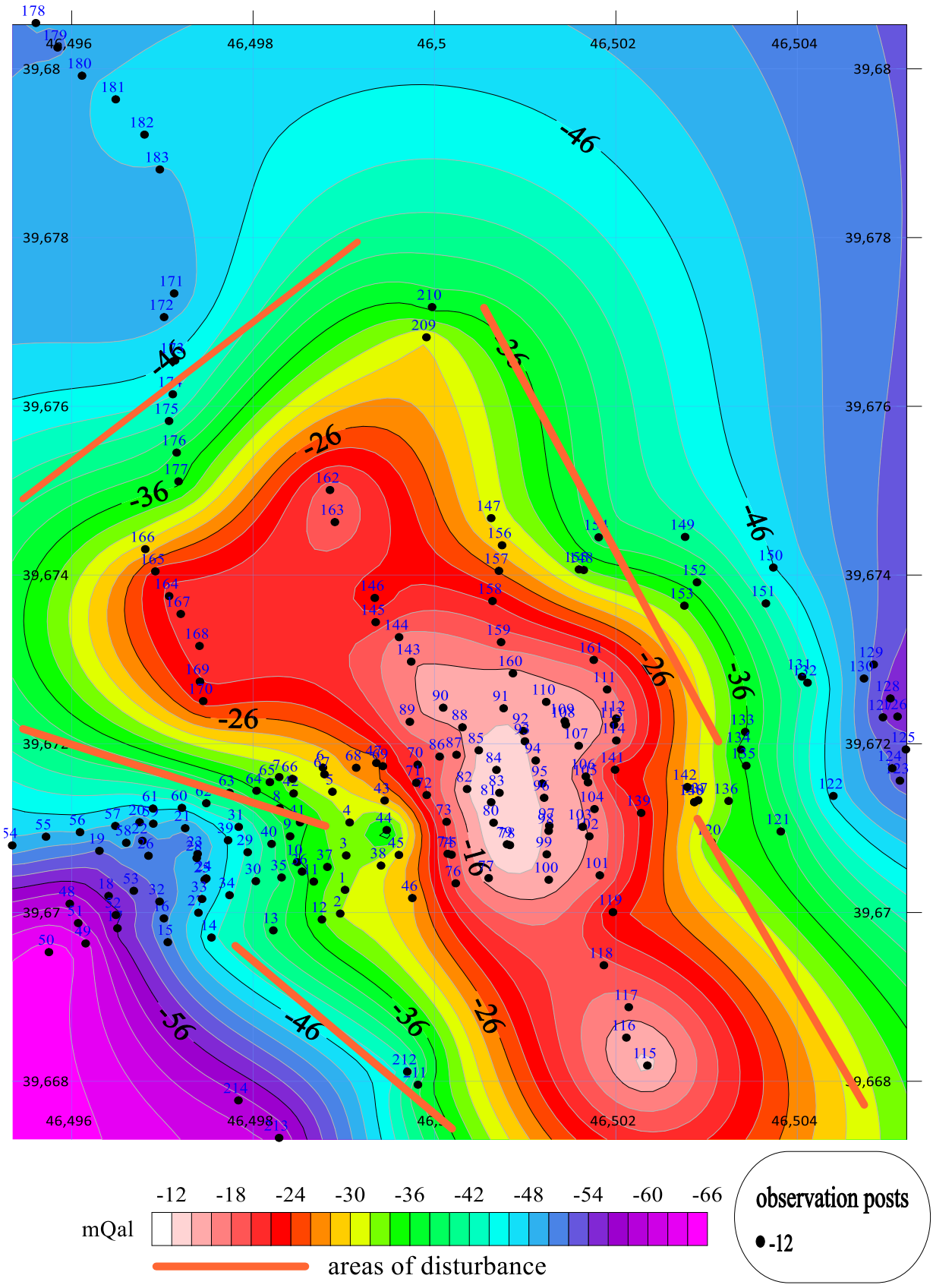


Figure 9. General iso-anomalies map of the gravity field reflecting the stress-strain state in the reservoir area on the Hakari River.

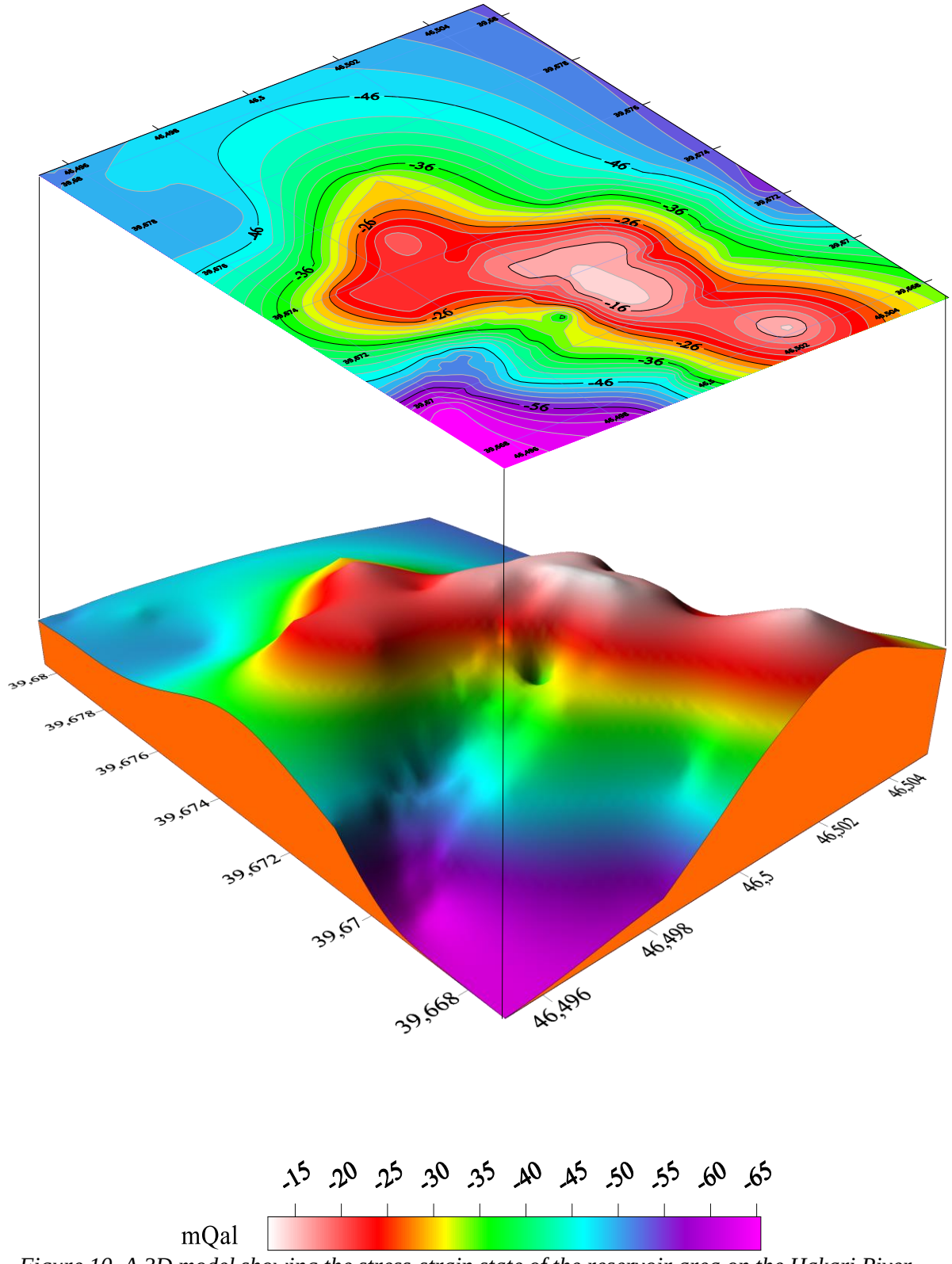


Figure 10. A 3D model showing the stress-strain state of the reservoir area on the Hakari River.

As can be seen from the isoanomalies maps of the gravity field, the anomalous areas accompanied by the variable value of the relative gravity force and the disturbance zones at their transition points have been determined. Thus, the relative gravity force in the center of the study area is completely closed from the north, partially closed from the south, and spreads from the sides to the

center with an increasing value, varying from -26,066 mgal to -11,866 mgal, and there is a local anomaly in a stretched state. The surroundings of this anomaly are open in all three directions, varying from -32,031 mgal to -65,164 mgal, accompanied by decreasing values spreading towards the northwest, northeast, and southwest. Such anomalies of the area's gravity field provide information that the research area has a complex geological structure and that there are rock masses of different densities. If we pay attention to the 3D model of the stress-deformation state of the geological environment based on the data of the gravity field corresponding to the reservoir area on the Hakari River, the results of the above-mentioned interpretation can be seen more accurately (Fig. 10.).

Conclusion

1. Using the gravimetric method, the geodynamic regime of the area where construction works will be carried out in the area where a water reservoir will be created on the Hekari River was evaluated, the tension dynamics of the gravity field was studied, and the fault zones were determined at the gradient crossing points of the detected anomalous gravity fields.
2. Based on the observations made in the research area, the possibility of the risk of anomalous areas and failure zones accompanied by the gradient increase and decrease of stress in local areas in 2D isoanomalous maps of Δg and 3D models reflecting the stress-deformation state of the geological environment is not assumed.
3. In the area, geological disturbances were monitored at different depth intervals, and the geodynamic regime was evaluated. It has been shown that there are no anomalous gradient dynamics in the area where the Hekari water reservoir will be built in Lachin region, and there are currently no areas prone to subsidence, landslides, or landslides in the areas where the water reservoir will be created.

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