AZERBAIJAN NATIONAL ACADEMY OF SCIENCES
COUNCIL OF YOUNG SCIENTISTS AND SPECIALISTS

SOCAR

ANAS - 75

SINCE 1945

Second International Scientific Conference of Young Scientists and Specialist

Multidisciplinary approaches in solving modern problems of fundamental and applied sciences

Book of Abstracts

Tuesday 03 – Friday 06 March, 2020

Baku / Azerbaijan

Second International Scientific Conference of Young Scientists and Specialists

Multidisciplinary approaches in solving modern problems of fundamental and applied sciences

Dedicated to the 75th anniversary of Azerbaijan National Academy of Sciences

Gənc Alim və Mütəxəssislərin İkinci Beynəlxalq Elmi Konfransı

Fundamental və tətbiqi elmlərin müasir problemlərinin həllində multidissiplinar yanaşma

Azərbaycan Milli Elmlər Akademiyasının 75 illiyinə həsr edilir

Conference is organizationally supported by the Azerbaijan National Academy of Sciences:

The Conference is financially supported by:

SOCAR

modifications of a number of minerals, while complex minerals forming isomorphic series can be calculated as a mixture of simpler minerals. The accuracy of the calculation can be improved by using additional data on the mineral composition, allowing to expand the list of minerals in the solid solution.

The research was performed using equipment of the Siberian Branch of the Russian Academy of Sciences Isotope-geochemical Research Joint use center and was funded by Russian Foundation for Basic Research according to the research project № 18-33-20104.

REFERENCES

1. Karpov, I.K., K.V. Chudnenko, D.A. Kulik and et.al. Minimization of Gibbs Free Energy in Geochemical Systems by Convex Programming. Geochem. Int., 2001. V. 39(11). p. 1108-1119.
2. Oshchepkova, A.V., M.I. Kuz'min, V.A. Bychinskij end et.al. Models of solid solutions for calculation of the mineral composition of Lake Baikal bottom sediments: A new approach to paleoclimatic reconstructions. Doklady Earth Sciences. 2015. V. 461(2). p. 364-367.
3. Smelyy, R.V., E.V. Kaneva, A.V. Oshchepkova and et.al. Determination of the mineral composition of the lake bottom sediments by X-ray diffraction method and physico-chemical modeling. J. Sib. Fed. Univ. Chem. 2019. V. 12(3). p. 382-394.

TECTONIC STRUCTURE OF KERCH-TAMAN FOLD ZONE

[1]Gaidalenok Olga Vladimirovna, [1,2]Sokolov Sergey Aleksandrovich
[1]Institute of Geology of Russian Academy of Science, Moscow, Russia
[2]Ordzhonikidze Russian State University for Geological Prospecting,Moscow, Russia
ogaydalen@yandex.ru

Kerch-Taman Fold Zone (KTFZ) issouthern part of Azov-Kuban Trough (Fig. 1). On the west, it is bounded by Central Crimea rise and Crimea orogen. On the east and south-east, KTFZ is bounded by Stavropol rise and orogen of North-Western Caucasus.

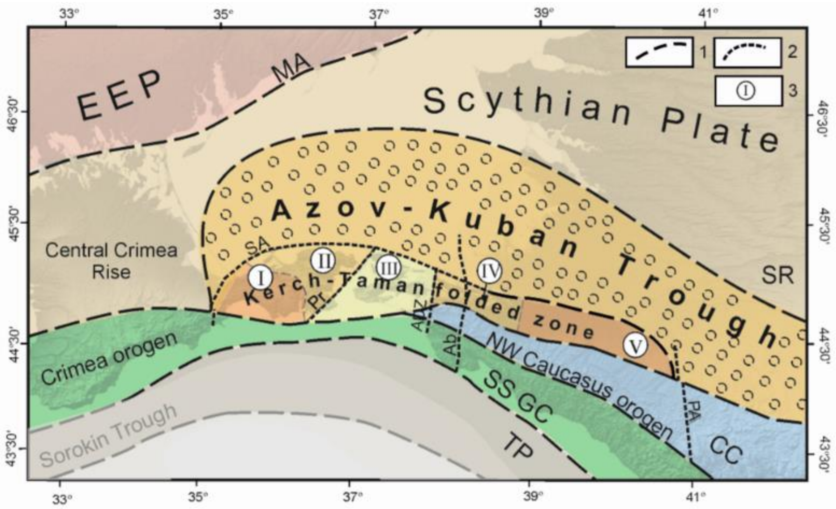

Figure. TectonicframeofKerch-TamanFoldZone (KTFZ), according [1; 2]revised and expanded.1 – boundariesoftectonicstructuresandsuggestedframeofKTFZ; 2 – fault zones; 3 – segments of KTFZ. Ab – Abrau fault zone, ADZ – Anapa-Dzhiginka fault zone, CC – Central Caucasus orogen, EEP – EastEuropeanPlatform, MA – Main Azov fault, NC

– North Crimea fault, PA – Pshekh-Adler fault zone, Pr – Pravdinsky fault, SA – Southern Azov fault, SS GC – Southern Slope of Great Caucasus

We divide KTFZ into 5 segments which are characterizedby different principal age of folding. Segment I covers south-western part of Kerch peninsula which is filled by highly dislocated deposits of Oligocene–Lower Miocene. In the north, these rocks are overlaid with unconformityby sediments of Middle Miocene. Hence, the main phase of folding is pre-Middle Miocenic. Segment II occupies northern and eastern parts of Kerch peninsula. In this segment, sediments up to Lower Pliocene are folded whereas Upper Pliocene–Quaternary deposits are deformed very slightly. Consequently, general folding in this segment is pre-Upper-Pliocene. Segment III involves area of Taman peninsula. Here, sediments from Oligocene to Upper Pleistocenetake place in folding [3]so that plicative dislocation in this segment is recent. Folds of Taman segment extend to *Azov Fold Zone* which is segment IV of KTFZ. It takes place in foreland of North-Western Caucasus. In this segment, Cretaceous–Miocene deposits are folded whereas Pliocene–Quaternary sedimentsdip gently. Thus, the main folding took place in pre-Pliocene age thatapproximately correlates to folding age in segment II. According to geophysical data, the folding extends further to the south-east and deformsOligocene–Lower Miocene and older age deposits whereas post-Lower Miocene deposits are deformed not significantly [4]. That allows us to separate assumable segment V of KTFZ.

Boundaries of segments with various age of folding in KTFZ are gradual between segments I-II and IV-V whereas boundaries of the central segment III and the whole KTFZ coincide with transverse zones of tectonic deformation. In the west, segment III is bounded by Pravdinsky fault. In the east, it is bounded by Anapa-Dzhiginka [5] and Abrau fault zones [6]. Western boundary of KTFZ is represented by sub-meridional zone of NNE faults. Eastern boundary of KTFZ is Pshekh-Adler fault zone.

Tectonic structure of the south frame of KTFZ is more complicated. In the west, it is represented byoverthrust structure in Upper Triassic–Jurassic rocksnear Ordjonikidze place. This structure is the most eastern part of Crimea orogen. To the east, Ordjonikidze structure extendsthrough pre-Mesozoic basement in the north of Black Sea[7] to Anapa rise [2] which is a part of NW Caucasus.

Conclusions. 1. Age of folding consistently changes along the trace of KTFZ. Folds of the central segment III are of the most recent age. Towardsthe west and east bounds of KTFZ the age of principal folding falls to pre-Pliocene in segments II and IV and pre-Early–Middle Miocene in the most western and eastern parts of KTFZ. 2. The western and eastern boundaries of Taman segment III as well as bounds of whole KTFZ are represented by faults zones. 3. Occurrence of the southern frame of KTFZ and its connection to Crimea orogen and NW Caucasus are stated.

Funding. Fieldworks were done due to Russian Science Foundation grant project № 17-17-01073.Study of paleontological data was conducted with financial support of President of Russian Federation grant for young Russian PhD researchers № MK-3510.2019.5. Analytical studies were done with funding from Russian Foundation of Basic Research № 18-05-00746.

REFERENCES

1. Tectonic map of Russia, adjacent areas and basins. Scale: 1:4000000. Ed.: O.A. Mazarovich, Ye.Ye. Milanovsky, S.L. Kostyuchenko / M.V. Lomonosov MSU / FGUP PKO Kartographiya, Moscow, 2007 (in Russ.)
2. Afanasenkov A.P., Nikishin A.M., Obukhov A.N. Eastern Black Sea Basin: geological structure and hydrocarbon potential. Moscow, Nauchnyi mir, 2007, 172 p. (in Russ.)

3. Gaydalenok O. V., Sokolov S. A., Izmailov Ya. A., Frolov P. D., Titov V. V., Tesakov A. S., Trifonov V. G., Latyshev A.V., N. A. Orlov. Recent data in Late Quaternary folding and relief deformation in north part of Taman peninsula, Russian Federation. Geomorphologiya, 2020,№1, pp. 54–68 (in Russ.)
4. Trikhunkov Ya.I. Neotectonic transformation of Cenozoic fold structures in the Northwestern Caucasus. Geotectonics, 2016, vol. 50. no 5, pp. 509–521
5. Khain V. E. and V. I. Popkov. Tectonics of Southern Framing of the East European Craton. Eds. Krasnodar, 2009, 213 p. (in Russ.)
6. Trikhunkov Ya.I., Gaydalenok O.V., Bachmanov D.M., Marinin A.V., S.A. Sokolov Recent Mountain Building at the Junction Zone of the Northwestern Caucasus and Intermediate Kerch–Taman Region, Russia.Geotectonics 53(4):517–532
7. Starostenko V., Janik T., Stephenson R., et al. DOBRE-2 WARR profile: the Earth's upper crust across Crimea between the Azov Massif and the northeastern Black Sea // Sosson M., R.A. Stephenson & Adamia S.A. (eds.) Tectonic Evolution of the Eastern Black Sea and Caucasus. Geological Society, London, Special Publications. 2017, vol. 428, pp. 199–220.

BOUGUER GRAVITY ANOMALIES: THEIR MEANING, BEHAVIOUR AND USE

Aydın N.G., İşseven T.
İstanbul Technical University, Faculty of Mines, Geophysical Engineering Department, İstanbul, Turkey
aydinn@itu.edu.tr

In this study, we are focusing on Bouguer gravity anomalies; most widely used gravity anomalies used in geophysics, achieved after applying a bunch of corrections and reductions. Bouguer gravity anomalies are cleansed from the effects of topography, which is why they are sensitive to underground density distributions, allowing the estimation of buried bodies' depths and approximate geometries.

The principles behind calculation and interpretation of Bouguer gravity anomalies depend on relative measurements and constancy assumptions. The data are collected relatively because the aim of the gravity prospecting in geophysics is to track the changes in gravitational acceleration with distance, not the exact value of the acceleration. The corrections applied on the relatively collected gravity data assume a constant crustal density which is generally 2.67 g/cm^3, calculated by Harkness (1891) to be the mean density of surface rocks. Combining these information together, one can say that Bouguer anomaly values do not represent the absolute gravitational acceleration values, but implies the deviation from the theoretically expected acceleration values for a location. With this aspect, positive Bouguer anomalies indicate that the subject area has higher gravitational acceleration, thus probably comprised of denser materials beneath, and vice versa. These effects are visualized in a model below using identical prisms with various densities (see fig.); prisms with lower density than Bouguer density result in negative anomalies, while higher densities result in positive anomalies and prism with exactly 2.67 g/cm^3 density does not produce an anomaly.