GEOLOGICAL AND GEOMORPHOLOGICAL FEATURES OF THE BERINGIA TERRITORY NATURE PRESERVE

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ABSTRACT

The future nature protection Beringia territory covering the East Chukotka Region (Chukotka Peninsula) as a geological area includes uniquely varied mountain rock formations (from metamorphic rock of the Archean age to basalts and friable sedimentary rocks of the Quaternary periods) and crustal tectonic structures.

Morphostructural features of the region are determined by the main characteristics of its geological structure. These features result from the composition of geological processes of different ages and different characters, displayed in the region development. The morphological structures safety depends on their scale, age and accordingly on the conformable geostructure development duration. They are geological and geomorphological, magmatogenic structures of central types - meta-morphogenic, magmatogenical ones connected with the Okhotsko-Chukotsk volcanogenic zone formation and block tectonogenic morphological structures (Tretjakov, 1988).

Morphostructures of the central type (MCT) are different in genesis, in composition of material and structural components and in age. Metamorphogenical structures of the Archean age were connected with common processes of the East Chukotka massif crystal base formation and development. Morphological structures (MCT) are expressed as fragmentary arched pieces of the Tertiary range with graben-looking depression formation in fault zones.

Magmatogenic (MCT) are connected with endogenous destruction processes of the continental crust and with the penetration of gabbro and granite intrusions during the Triassic and Cretaceous periods. It means their formation os resulted from the Mechigmenski trough development during the tectonic and magmatic activation stage. The surfaces of these structures (MCT are cupola-shaped both completely developed and limited with linear results).

Morphological structures of the central type are connected with the development of the Chukotka sector of the Okhotsk-Chukotsk volcangenic zone part included into the future nature protection Beringia territory, and these structures have cupola-shaped surfaces of internal parts broken with transverse faults.

Morphostructures of the tectonogenic character represent block of geological formations in the contemporary relief formed from different rocks of different age and limited with broken dislocations. Morphostructures control a number of metallogenic zones and the mophostructures of the central type are locating. The potential estimation concerning to mineral deposits is rather high: coal, graphic formations and other deposits are known.

INTRODUCTION

The proposed area of the international Beringia Park territory will cover the Chukotsky, Providensky and the eastern part of the Iultinsky regions of Chukotka. It also includes almost the whole Chukotsky peninsula which we have determined as the area extending towards the west from Dezhnev Cape to the imaginary straight line joining the western parts of the Koliuchinsky inlet and the Cross Gulf in the Kenchinin Bay.

Geologically, the Chukotsky peninsula includes uniquely varied mountain rock formations (including metamorphic rocks of the Archean age through basalts and friable sedimentary rocks of the Quaternary period) and tectonic structures of the earth's crust.

The area includes the East Chukotsky massif, the southeastern part of the Chukotsky folded region Chaunsky zone and the East Chukotsky zone of the Okhotsko-Chukotsky volcanogenic belt (OCVB). There are stratigraphical formations making up the area: in the east there are metamorphic formations of the Archean age, Proterozoic era, Ordovician, Carboniferous and Silurian; in the north and in the central part of the territory there are geosynclinal sediments of the upper Permian, Triassic, and the lower Cretaceous; in the southwest there are subaerial cretaceous volcanic rocks of the OCVB. In littoral valleys, intermontaine depressions and in river basins cenozoic sediments are well displayed. Quaternary effusive rocks are locally distributed.

The geological, tectonic, and geomorphological structure of the territory is considered in this article as a unique system where morphostructures are marked out. The authors emphasis monitoring of certain metallogenic zones and recommend further geological and reconnaissance work be done in the area taking into account that this area is proposed as the Beringia park nature preserve.

Morphostructural peculiarities of the region (a large morphostructure) are determined by the main features of its geological structure, and they show the total effect of the varied and differently aged geological processes which were displayed during its development. The morphostructural elements safety depends on their scale, age and on duration of conformable geostructure progress. Geological and geomorphological systems of different

types are marked out in the region. They differ in essence: morphostructures of the central type (MCT) - metamorphogenical and magmatogenical; and block tectonogenical morphostructures (TMS).

MATERIALS AND METHODS

The proposed Beringia park area (has been studied) is situated unevenly. Only the southwestern part of the geological structure has been sufficiently studied (enough deciphered) (surveys made at the scale of 1:50,000 and larger). The eastern regions were covered with geological surveying of the mean scale in 50-60th. Ninety seven percent of the area has been studied in the mean scale (GSW-200). Twenty-seven percent of the area has been studied in the large scale (1:50,000 and larger). Geological investigations and search for placer gold was conducted in certain areas. In discovered gold placers and in thermal water manifestations search and estimation work was carried out in small volume. About 90% of the area has been studied by geochemical research through dispersion streams in the scale 1:50,000 (streams-200), and about 5% of the territory has been studied by lithochemical surveying in the scale 1:50,000 and larger. The whole region is covered with a gravimetric survey at a scale of 1:1,000,000 and with an aeromagnetic survey at a scale of 1:50,000. A gravimetric survey at a scale of 1:200,000 covered 40% of the area. A spectrometric survey at a scale of 1:50,000 was carried out in limited areas (7%), fragmentarily. Subject and specialized investigations had narrow and purposeful character and they directed to study stratigraphy of the Archean, Ordovician, Silurian, Devonian and Quaternary sediments, to study also petrology of certain granitoidal massifs, to find out presence of diamond in ultrabasic rocks, content of coal in volcanogenic terranes of OCVB, and content of oil and gas in terrigenous strata of the Koiuchinsko-Mechigmensky depression.

In this work, we used information from two expeditions: Anadyrsky and East-Chukotsky, papers of the North East Geology Society of the Oceanology Institute and documents on interpretation of cosmic and aerial photographs taken for morphostructures to separate.

RESULTS AND DISCUSSIONS

The usual method used to study connections of interacting systems (Kachmenskaja, 1980), geological and geophysical, allows us to consider the territory as a unique geological and geomorphological system. We mark out natural and territorial complexes connected with that unique system, and these complexes inherit those properties (Zheleznov, 1991; Zheleznov et.al., 1991).

The first order structure - the East Chukotsky massif - occupies the eastern extremity of the Chukotsky peninsula. There are two uplifts we differ in the massif - Uelensky in the north and Seniavinsky in the south. They are separated by the Koliuchinsky - Mechigmensky depression (Fig. 1). The border between the Seniavinsky and Uelensky uplifts lies in the zone of a deepseated fault, directed towards the northwest. The fault is fixed by anomalous and magnetic field changes and by gravitational level of gravity field. The border between the Seniavinsky uplift and the Koliuchinsky-Mechigmensky depression is expressed less clearly and it is concealed to the considerable degree by the OCVB structures. Foundation of the massif is formed by amphibolite facies Archean and Proterozoic rocks of regional metamorphism. The main structures of the foundation are Neshkinsky and Koolensky blocks of the Uelensky uplift and the Seniavinsky uplifts central block. The Archean formations (AR_1 and AR_2) are carbonate rocks (with thicknesses of more than 1550 m). And gneisses and amphibolites (3250 m thick). The highest estimate for the age is 1630 million years. The upper proterozoic formation (PR_2) are presented by limestones, mica and chlorite slates and quartz rocks (a thickness of 1 to 1.1 km). According to acritarchs the deposits are as old as the middle of the upper Riphean. The foundation metamorphites of the massif are mainly crumpled into brachymorphological folds with development of large domes, which have irregular forms on a map and they are separated by narrow synclinal contractions. Crystalline rock masses form the spacious isometrical arch with the complex interior structure within the Koolensky block which is the largest one and it is relatively poor broken. Within the Neshkansky prominence the foundation ancient folded structure was strongly broken and it entailed displacing of the arch core fragments, and the core is complicated by sloping domes and synclinal folds, by radial and concentric lineal fractures. Crystalline formations of the Seniavinsky prominence (the central block) make up the extensive, north-west stretched arch with sloping limbs.

The East Chukotsky massif cover is made up of carbonate, terrigenous carbonate and terrigene formations of the Paleozoic age. Ordovician deposits (O_1, O_2, O_3), are spread in the Chegitun river basin and in the delta part of the river on the Chukotsky sea coast. There are limestones, shales, phyllites, quartzites with fauna containing benthos-corals, brachiopods, trilobites and ostracods in the sections. Silurian deposits (S) are scantly developed in the Chegitun river basin and they are presented by monotonous maritime carbonate sediments. Devonian deposits (D_1, D_2) are observed in the Chegitun river basin and on the southwest coast of the

Mechigmensky inlet. The deposits are made up of carbonate and terrigenous carbonate rocks, and lower and upper Devonian formations are distinguished among them. Carboniferous deposits (C_1) are presented by terrigenous carbonate formations of the lower Carboniferous period (600 m.) And they are observed on the Chukotsky sea coast between the Dzhnev Cape and the Chegitun river mouth. Paleozoic rocks making up the massif cover are scantly stationed. These rocks form such structures as isometrical brachy-syncline and brachy-anticline folds, and in certain cases, they form sloped (10-20 degree) monoclines. The Velmaisky uplift is a structure of the geosyncline early consolidation. It is overlapped with the OCVB volcanites from the south and from the east. The northeast extremity is hidden under Cenozoic sediments. The uplift has a block folded structure and it is made up of Permo-Triassic rocks of aspid and flysh formations. Metamorphic rocks of the Paleozoic period outcrop in the most uplifted tectonic blocks and in the roofs of large granitoid massifs. Koliuchinsky Mechigmensky depression is the eastern flank of the Chaunsky zone, and it represents a large negative structure of graben syncline type. The depression was developed on the heterogenetic base and it has asymmetrical structure in its cross section. It is made up of terrigenous Permo-lower Triassic ($P\text{-}T_1$) sediments of aspid and flysh formations of the geosyncline complex with certain rock blocks manifestations of the Archean foundation and of Paleozoic folded base of Mesozoids.

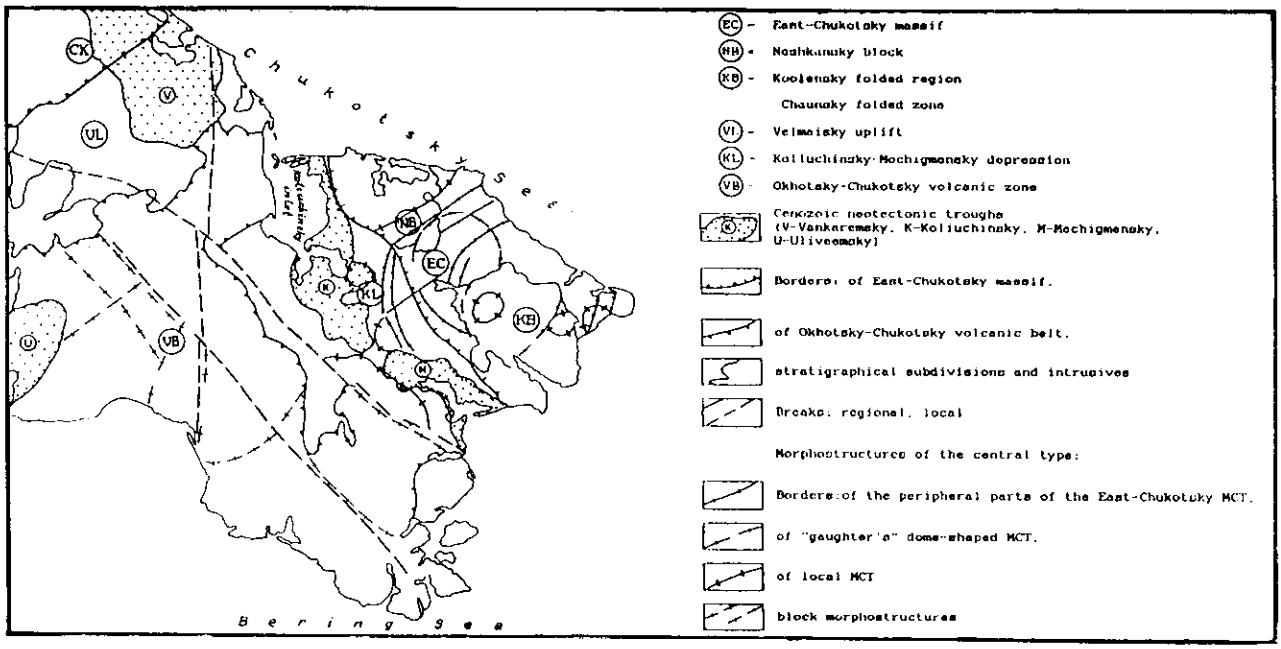

Fig. 1. Structural-tectonic and morphogenetic scheme of the Chukotsky peninsula (Compilers J.V. Tsukanov, Al. Zhukova, 1994)

Early Cretaceous accumulations of the lower molassa are observed in certain areas. At the present time, the depression mostly presents non tectonic trough made up of friable cenozoic sediments, and reflects the inherited character of the structure development. The southern part of the Chukotsky peninsula is occupied by the Kurupkinsky eugeosynclinal depression. The depression folded sediments are exposed in small areas of erosion, and in tectonically uplifted foundation blocks of the east Chukotsky zone of the OCVB. They are presented by berrias-valanzhinsky flinty, terrigenous and volcanogenic rocks with fossil remains of buchites, belemnites, foliar flora and they are accompanied by early cretaceous gabbroids and ultamafites. The east Chukotsky zone of the OCVB is presented by its eastern subzone. It crosses the Seniavinsky prominence of the east Chukotsky massif and the south western bort of the Koliuchinsky-Mechigmensky depression. The subzone is made up of gently sloping volcanites occurrences of mela-andesite and rhyolite-andesite formations which are broken through by intrusive and subvolcanic bodies. The east Chukotsky zone is separated from the Mesozoic geosynclinal complex by the sharply defined surface of the structural non-conformity. The main structures of the volcanogenic subzone are volcanic and tectonic depressions and intrusive dome uplifts.

Cenozoic neotectonic troughs are developed in littoral plains and in intermontaine areas. The Krestovskaja, Uliuveemskaja, Vankaremskaja and Koliuchinskaja troughs are the largest ones, and they are made up of oligocenic neogenic and quaternary sediments of different genetic types. Their thickness reaches 250 m. And

more. Quaternary formations of different genetic types of lower, middle, upper, and modern links and also locally developed volcanites are enough broadly spread on the Chukotsky peninsula territory.

Development of explosive breaks, various in character and in morphology, was predetermined by the full enough spectrum of geological structures of different age within the area, by their long development in time, and also by the clearly defined block character. According to the manifestation scale there are two groups of breaks: the regional magma-controlling deeply located fractures and local steeply falling faults and left-side faulted displacements. The breaks directed to the northwest (Mechigmensky, Vapanaisky), to the north east (Kymyneiveemsky, Miliutheveemsky) and to the submeridian (Ergyveemsky, Kuskuveemsky) are mostly defined.

Intrusive and subvolcanic formations are widely developed in the territory. According to the age and to the composition the following formations are marked out: Archean, Lower Triassic, upper Triassic-lower Jurassic, lower Cretaceous plutonic (intrusive), subvolcanic, upper Cretaceous plutonic and subvolcanic complexes of various magmatic formations. Archean magmatic formations and migmatites of the Lavrentia plutonic complex of the migmatite-granite formation are displayed in the Koolensky block of the Uelensky uplift.

They look like stock or lens-shaped bodies, like stratum deposits, dikes and veins in the migmatized Archean metamorphites. The absolute age of double-micaceous granites is 700 million years. The gabbro and gabbro-diabases lower Triassic intrusives of the Anuisky plutonic complex of the gabbro-diabase formation are spread within the Koliuchinsky-Mechigmensky depression, where they form strained and boudinaged sills, stocks and dikes among the lower Triassic sediments. Mineralization of titanium is connected with the lower Triassic gabbroids, and when these later are broken, in entails ilmenites placer manifestations. Upper Triassic - lower Jurassic intrusives are scantly developed westward from the Koliuchinsky inlet and they are structurally joined to the Gross Gulf eugeosynclinal zone of mesozoids. They are presented by the Kymyneiveemsky plutonic complex of the diorite plagiogranite formation. The lower Cretaceous intrusive formations of plutonic, or, more rarely, of subvolcanic complexes, are various (from ultrabasic to acid alkaline-earth and alkaline) in their composition. Erguveemsky and Kurupkinsky plutonic complexes of the ultamaphic formation are joined to the zone of fractures which look like tectonic lens, plates and blocks within the Kurupkinsky eugeosynclinal depression. Certain ultramaphites bodies genetically entail low-grade chrysotily-asbestos manifestations in serpentinites and mercurial mineralization in listvenites. Peridotite breccias are perspectively potential to search diamonds. Prebatholith lower cretaceous small intrusives of the Right-Telekaisky intrusive complex of the diorite-granodiorite formation make up independent stocks in the Chegitun river basion or they take part in heterogenetic massif structure within the Neshkansky and Koolensky blocks. Dioritoid intrusives spatialy entail gold-quartz low-sulphide and gold-sulphide formations mineralization. Plutonic lower Cretaceous polyphase complexes (Taureransky, Dezhnevsky, Lavrentievsky) of granite-granodiorite formations of Chukotsky mesozoids of orogenic batholith shaped massifs (Netteveemsky, Dezhnevsky) and of small intrusives are registered in the eastern part of the territory. Ore and placer gold and tin manifestations, tungsten shows, polymetallic and rare-metallic mineralization are bound up with intrusives of granodiorite and granite-leucogranite formations.

Subvolcanic formations make up small stocks, laccoliths, sills, dikes of the lower Cretaceous Nyrvakinotsky complex of andesite formations and upper Cretaceous complexes of rhyolite-dacitic, andesite and basalt-andesite formations. Subvolcanic bodies of andesites are located in underlying rocks of the OCVB foundation, more rarely they occur in comagmatic covering volcanites. Industrial gold-silver mineralization spatialy is drawn towards extrusives and necks of the rhyolite formation's rocks. Upper Cretaceous plutonic granodiorite complexes makes up numerous, but small in area hypabyssal intrusives. These rocks are characterized by heightened alkalinity. Alkaline granites form intrusives of the plutonic complex of the alkaline-granite formation. The absolute age of granites is 60-75 million years. Intrusives of the complexes spatialy and paragenetically involve manifestations of gold, silver, molybdenum, bismuth, polymetals, tungsten.

Metamorphogenetic MCT of the Archean deposit are bound up with formation and development processes of the crystalline east Chukotsky massifs foundation. They became the structural base the east Chukotsky metamorphogenetic dome (ECMD) to mark out, and also it concerns to its conformable substructure, the Koolensky uplift. The ECMD has the diameter 150-160 km, but it is not developed completely, in the northeast it is limited by a break of the northwest strike traced by the Chegitun and Netteveem, river valleys. In the south the dome is limited by the tectonic blocks system. In the eastern part, the ECMD contour in underlined by the wide (up to 35 km) System of breaks and it is morphologically defined by the bow-shaped section of the Teniany Range. In the southeast, the contour joints with the Mechigmensky depression and is displayed fragmentarily due to the destruction of the peripheral dome parts during the formation process of the depression. The breaks of the ECMD contour control placing the Cretaceous period granitoid intrusives and local magmatogene MCT of the higher orders involved by the breaks. They do it the whole perimeter long. In the interior parts of the ECMD local polygenetic MCT of different age are also marked out. The ECMD contours and the contours of the local MCT are deciphered on cosmic photographs at the a scale of 1:1,000,000 and fragmentarily.

The lowland relief's region is formed by the totality of endogenic and exogenetic relief forming factors within the ECMD. The relief genetically is erosional and denudational with the subordinate development of glacial, fluvial and maritime forms. According to morphological signs and to different forms combination, the lowland includes areas of the relief, which is strongly separated in the axial part of the Teniany range, and it gradually passes to the east and to the west, where the areas are poorly separated. The absolute elevation marks of the axial part of the Teniany range make up 600-970 m. Relative extents of watersheds above the valley bottoms go up to 400-600 m. Slopes are high (up to 30-35 degrees), they are downfalling or downfalling and crumbling, they are separated by erosional hollows with talus cones stone trains. Skerries with the height of 3-5 m. are not rarely observed there. Watersheds are comb-shaped in the areas of the metamorphosed rocks development and they are smoothed where granitoids are displayed. The river valleys are tub shaped, v-shaped towards upper reaches and near channels of higher orders included in smoothed bottoms of cores measuring 300 by 500 m. with a wall height of 50-70 m. The absolute marks of the faintly separated lowland are 400-600 m. The relative extents go up to 200-300 m. Slopes are talus or talus-solufluctional, they are of the middle steepness (up to 25 degrees) and gentle (5-10 degrees). Watersheds and tops are flat.

MCT involved by the Chukotsky section of the OCVB are isolated in the considered territory. They are as long as 7-15 km across, their interior parts surface is dome-shaped, it is made up of effusions, subvolcanic and intrusive formations under the leading role of sobvolvanic ones. Magmatogene MCT made the base for the lowland relief to form. The relief is alpine and moderately separated, its genesis is erosional and denudational with the absolute marks 750-1000 m and with relative extents within 600-700 m. The watersheds rides are sharp and often rocky, the slopes are down falling or down falling and crumbling, steep (30 degrees and more), with talus cones and frames, which are typical for the areas of gabbroids, series of proterozoic and Paleozoic periods. The first order channels valleys are tub shaped with entrenched floors. The channel valleys of higher orders are V-shaped, and quite often they are crowned by cirques and cores in headwaters. Gentle slopes, straight or faintly convex, with the steepness of 15-20 degrees are typical for the areas made up of granites and tuffs of persilicic rocks.

In the region Tectogenic morphostructures occupy areas which are smaller regarding MCT and they present blocks defined in the modern relief and made up of heterogeneous and differentially aged formations. The morphostructures are limited by breaks of various morphology. The morphostructures of this type are placed in the northern and in the southern part of the Mechigmensky depression, in the ECMD periphery and in the southern part of the peninsula. The tectogenic morphostructures were roughly formed in the end of the Paleogene; in the first part of the Miocene. They system of the newest breaks (including rejuvenated ancient ones) of different orders played the main role in differentiation and formation of the morphostructures. The zones dividing breaks into blocks are clearly deciphered in the cosmic photographs, and they look like rectilinear depressional forms in the relief. It stipulated the complex mosaic and block texture of the tectonogenic morphostructures. As a result, the once existed peneplanational surface of the Cretaceous-Paleogene age was subjected to breaking up and to uneven dislocations. The lowland relief of the erosional and tectonic origin is typical for the main part of the territory where the tectonogenic morphostructures are distributed.

According to the signs and to the different forms combinations, the lowland is divided into the areas of the intensively separated and highland relief. These areas features were determined by the intensity of denudation processes displaying and by the differences in the geological structure. The relief developed on these foundations is characterized by the absolute marks 700-1000 m, and by the relative extents which are not higher than 300-600 m. Mountain tops often look like peaks. Watersheds depend on geological foundation, they are narrow and rocky, with numerous denudational outlayers, as well as flattened. Sometimes relief stages are observed, and they have developed denudational surfaces of several levels within the limits: 720-1000 m, 650-680 m, 500-600 m, 380-450 m. A part of them refers to the upland later origin terraces of different hypsometric position. The other part may be attributed to the structural surfaces splintered fragments such as stratum and caldera rocks. (Khudiakov et. al., 1975) which are on the lithological base of lava covers. It is typical, for instance for the Iskhodnaja mountain spurs. The slopes are mainly steep, falling down with screes, right up to be sheer, and they are complicated with cores and cirques. The griable cover is broken and lacking power (the first meters) because of great relief energy. The cover is presented by roughly broken formations of the slope range on the lithological base of liparites, their tuffs, and in less degree, of andesites, andesite-dacites, their tuffs and lavas. The drainage system, within the blocks in question, is presented, generally, by the channels from the first order till the third one, with V-shaped valleys; sometimes the valleys look like canyons. Valleys of higher orders are trough-looking. The relief keeps glaciation traces. In the valleys there are laid accumulative glacial forms looking like swells of retreatal and lateral moraines, and also looking like fluvioglacial terraces with the height up to 30-40 m.

Magmatogene MCT were formed as a result of con considerable in volume intrusives emplacement. The intrusives were different in their composition and they were intruded during the Triassic and the upper Cretaceous

periods under the Mechigmensky depressions formation and during the tectonic and magmatic activization phase. Magmatogene MCT formed by the Triassic gabbroids are located beyond the borders of the ECMD, within the Mechigmensky depressions interior parts. Their diameter is as long as 12 to 24 km, the interior surfaces morphology is completely dome-shaped as well as "demi-dome-shaped" and limited by linear breaks. Xenoliths of ten Permo-Triassic sediments is emphasised by their configuration on concentricity of the morphostructures, where their position is unconformable to the MCT contour. The morphostructures formed by granitoids have the lower and the upper Cretaceous character of their locations on the base of the conformable magmatic complexes age. MCT spatially associate with each other and dispose themselves in the ECMD. Their dimensions change from 5 to 27 km, in diameter; their form is right concentric or ellipse shaped; their interior parts morphology is complex, dome-shaped or circular. The MCT disposed apart are the simplest, their area considerable part (in the center or in the peripheries) is made up of conformable granitoids intrusives. MCT of different measures, drawn towards the western ECMD peripheries, are ellipse shaped and their geostructure looks like a block saturated with granitoids of the lower and upper Cretaceous periods. The granitoids have complex interrelations with Triassic gabbroids, with stratificated series of the Proterozoic, Paleozoic and with the upper Cretaceous tuffs and persilic content. Numerous concentric breaks of interior parts of the complex MCT and the fact there are MCT of higher orders in the complex ones, these phenomenons are indicative of the ECMD duration and of its developments many stages.

The morphostructures control and localize certain metallogenic zones. Regarding mineral deposits the Chukotsky peninsula potential estimates are high. There are known coal and graphite manifestations, perspective occurrences to develop commercially; ore and placer gold and tin, deposits and manifestations of silver, copper, zinc, lead, tungsten and uranium. There are mineral and thermomineral waters, building materials, statuary and facing marble, and precious stones (axinite).

Glacial relief kept sculptural and accumulative forms of the middle Quaternary mountain cover glaciation and of the upper Quaternary mountain valley one. The firn line was placed in the absolute height mark of 200 m. It determined numerous glaciation centers being. In the alpine type areas and in the intensively broken lowlands, the middle Quaternary glaciers of the net like type worked out numerous ice flow saddles. Within gently sloping lowlands there are intermountain troughs entailed by the glaciers. Exarational forms of the glaciation were transformed by the following denudation processes. Accumulative forms were kept fragmentarily in the pre mountain part of the Koliuchinsky lowland. Monticute Morainic relief was formed by the glaciers there. Hills are very gently sloping (up to 5 degrees) and their height makes up 10-15 m. The hills are quite often separated by thermokarstic lakes.

During the first stage of the upper Pleistocene glaciation the absolute firn line height was about 400 m, large glaciation centers were disposed within the areas of intensively and moderately separated lowland with the tops marks 1000-700 m. As a result of the upper Quaternary mountain and valley glaciers receding, in the intermontaine troughs and within the river valley bottoms, gently rolling relief of fluvioglacial plains were formed on the surfaces of the neotectonic depressions: Mechigmensky one in the east; Koliuchinsky one in the northeast of the territory. During the second stage of the upper Quaternary glaciation there were only small core glaciers within the ranges keeping sculpture glacier forms. The glacier exaration areas remained in the Koliuchinsky and Mechigmensky depressions, in the Igelveem, Ioniveem river valleys, and they present slopes flattened out with accumulations of drumlins and flowed round outlayers. The glacier ridge-hilly relief flowned by the accumulative processes covers the areas of the Koliuchinsky and Mechigmensky lowlands, and also the valleys of large channels.

In the middle stream of the Ioniveem river the hilly-sinking water-glacier relief changes for a water-glacier plain with rare gently sloping spurs as high as 2-3 m.

The fluvial relief forms accumulative flood plains (0.2-0.3 m), high flood plain (1.3 m); the first one (1.5 m), the second one Q_{III} (10-12 m). And the third one Q_{III} (25-30 m), and terraces above flood plains.

The length of the territory coastline is considerable and on the map, it has a complex shape reflecting geological and structural features and modern coastal processes influence, and also the influence of the sea water activity and the frozen ground conditions. As a result, accumulative forms of the coastal and bottom relief and abrasion coasts are formed. The coastal line is intensively dissected due to deeply entrenched bays and fiords. Shores are mainly precipitous, worked out in rocks. Marine accumulative forms are widely developed in the Koliuchinsky and Mechigmensky inlets shores. They are four marine terraces, tidal marshes, beaches, bay-bars, spits. Eolian forms of the relief were only displayed in the marine spits.

CONCLUSION

The considerable part of the Chukotsky peninsula territory is supposed to be covered by the proposed Beringia Park. In geological respect this area is considered as a region including uniquely various formations and tectonic structures of the earths crust. Some of them provoke the most interest. They are the Archean and Paleozoic formations of the east Chukotsky massif, sediments of the eugeosyncline complexes of mesozoids, ultramafites and alkaline rocks of the Dzhnevsky complex and the Quaternary basalts of the Kurupka river basin, deposits of the Paleogene, Neogene and Quaternary periods.

Henceforward, prospecting and estimation work will be conducted to realize predictable resources of mineral deposits. It is meant by rich potential of the region mineral and raw materials source. Morphostructural monitoring of metallogenic zones in the territories geological and geomorphological system allows to take out the main ore knots Erguveemsky and Dioritovy-beyond the future Beringia park limits, it may be done under the system electoral character of the nature protection territories marking out. These two areas, mentioned above, are not valuable in nature protection respect. In perspective it will be possible to create a health resort complex on the Chaplinsky base of thermomineral waters pool, which has a convenient geographical location (65 km from Providenia). It may be done after the additional research work is carried out. It is recommended to conduct geological investigations of the least studied part of the Chukotsky peninsula to clear up the ecological situation taking into account commercial exploitations of raw minerals. It is necessary to reveal geological monuments and to locate the areas of collection minerals development, for working out recommendations for tourism of different types in the future nature protection Beringia territory.

ACKNOWLEDGEMENTS

The authors acknowledge the help of Tikhomirov, J.B., and of Tretiakova A.V., and thank their kindness to allow using of stock materials to summarize the information on the Chukotsky peninsula territory.

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