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ҚАЗАҚСТАН РЕСПУБЛИКАСЫ
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ИЗВЕСТИЯ

НАЦИОНАЛЬНОЙ АКАДЕМИИ НАУК
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NEWS

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**TOPONYMS OF CRETACEOUS DEPOSITS
IN WESTERN KAZAKHSTAN TERRITORY
(in the context of Aktobe region)**

Abstract. The article deals with the occurrence of Cretaceous deposits in the territory of Aktobe region and geographical ground of their reflection in local toponyms. Aktobe region is characterized by the complexity of the terrain in West Kazakhstan. Terrain features are influenced by its geological structure and terrain-forming factors. The map presents a selection of toponyms including the words *ak*, *bor*, *saz*, *kum*, *shagyl* which correspond to the formations of lower Cretaceous and upper Cretaceous deposits widespread in the western part of the region. The percent of oronyms, hydronyms and oikonyms in the toponyms of 141 names selected in the study area was analyzed with subsequent representation on the diagram. The analysis of the names of *Aktolagay*, *Akshatau*, *Belogorka*, *Aktau*, *Akzhar*, etc., indicating the reflection in toponyms of such physical properties of rocks as composition, color and the rate of their frequency is carried out, the results are presented in a table. The map shows the position of geographical features corresponding to the outcropping Cretaceous beds and photos of the area are provided.

Key words: Cretaceous deposits, geological properties, Aktobe region, toponyms.

Introduction. Onomastic stratigraphy is understood as the relative chronology of onomastic systems, processes and phenomena. Onomastics of a single chronological period in the study of onomastic stratigraphy of the region is considered a synchronous cross-section. The terms synchronous cross-section and stratigraphy are borrowed from archaeology and geology but today both the method of synchronous cross-section and stratigraphic analysis are parts of the traditional set of research techniques of onomastics [1, 203-215]. The first term helps to study the onomastic state, i.e. the state of the name system of the territory in a certain geological period, the second term - the onomastic process – the regular change of onomastic states of this territory in chronological order.

Toponymy in combination with stratigraphy gives us a new section of toponymy - geostratonymy the purpose of which is determined as the study of the origin, development, current state, etymology of the set of names of the Earth's geological layers - straton. The object of geostratonymy is a separate name of a geological straton - geostratonym and the subject is its history of origin, etymology and diachronic transformation. The proposed terms are derived from the Greek stems *geo* - earth, *onyma* - name, and Latin *stratum* - formation, layer, - literally "names of the layers of the Earth", i.e. they are based on the principle of internationality of toponymic terminology, and, at the same time, reflect the field of their use, the subject and object of research [2].

Cretaceous deposits in Kazakhstan are widely developed in the western part of the country - these are marine sediments of the Paleocaspian sea that covered the entire area of West Kazakhstan. The Paleocaspian waters were rich with foraminifera and planktonic Golden microalgae – coccolithophorids - whose skeletons in huge quantities sedimented on the bottom and formed Cretaceous deposits.

In this article we will focus on the history of the study of only those Cretaceous deposits development areas in Western Kazakhstan that we are directly interested in, namely: the Embensky district (Zhem), Mugalzhar, Shoshkakol anticline, and the North Aral sea region. The Lower Cretaceous deposits within the Embensky region were first established by N. N. Tikhonovich and A. N. Zamyatin [3]. After that brief descriptions or references to the participation of Lower Cretaceous deposits in the geology of individual structures or small areas appeared in dozens of different articles and essays concerning the Embensky district.

Cretaceous deposits of the Western Kazakhstan territories. During the Cretaceous period marine conditions had relatively stable development only in the South-West of the Republic of Kazakhstan. The sea here did not represent a permanent basin, and more than once left the territory of the Kazakhstan's western outskirts. The sea was most widespread in the Upper Cretaceous, when the entire western part of Kazakhstan up to the western edge of the Kazakh Upland was covered by the waters of a vast Upper Cretaceous transgression. This vast basin was connected through the Turgai basin to the Cretaceous basin that covered the West Siberian lowland. The Lower Cretaceous deposits in the Caspian lowlands are predominantly marine, while the Upper Cretaceous deposits are exclusively marine. The characteristic sediments of the Upper Cretaceous are presented by white writing chalk stone. Cretaceous deposits of western Primugodzharie have a similar section. In the eastern Primugodzharie sediments of Early Cretaceous period are represented by continental facies sometimes bauxitebearing ones [4].

Considering the works which provide coverage of the structure of West Kazakhstan Cretaceous deposits we see that the marine formations of this age are the most well-studied and, first of all, the Cretaceous deposits of the Emba basin (Zhem). However, the nature of the transition of marine sediments to continental sediments in the direction from the central parts of the Emba basin to its eastern margin, to the Mugalzhar and Shoshkakol anticline, remained unclear. It was not clear which Cretaceous system stages represented in the Emba basin by marine sediments correspond to the continental deposits of the Shoshkakol anticline and the western slope of the Mugalzhar. The details of the change in the section of Lower Cretaceous sediments within the Emba basin itself in the direction to the East were not known, in particular, the nature of the transition of the Lower and Middle Albian marine sediments to the same-age sediments of continental origin was not clarified, though the existence of such transition was supposed by a number of authors [5].

The study of the Cretaceous deposits of the Zhem (Emba), Sagiz, and Uil river basins is of particular importance for our work as just here we encounter the most complete section of sediments of this age, represented almost exclusively by marine sediments. The thickness of marine sediments decreases in the direction of the migration area located in the east and the north-east, there is a sharp depletion of their fauna and partial replacement by continental formations. This pattern allows for the estimating the age of particular formations of continental origin developed within the upper reaches of the Emba and even further east - in the Shoshkakol anticline and the Mugalzhar by tracing the gradual transition of marine faunistically characterized deposits to continental ones.

The entire complex of Lower Cretaceous sediments of the Emba, Sagiz, Uil and Ilek river basins represents sediments basically of a single transgressive cycle. Commencing in Valangian the transgression developed with some fluctuations in Hauterivian-Barremian and reached the maximum in Aptian. Then a regression began and in the upper Albian marine sediment deposition occurred only within the southern Emba, giving the way to the accumulation of thick continental strata in the rest of the territory [6].

In the West, in the area of the Emba river (Zhem) lower and middle reaches the Cretaceous deposits are almost entirely represented by marine sediments among which almost all the layers and sometimes particular zones of this system could be distinguished and faunistically characterized. To the East, in the upper reaches of the Emba river, in the area of the Shoshkakol anticline and in the North Aral sea region, marine sediments are represented only by Upper Cretaceous deposits. At the same time in most sections only Senonian deposits are expressed in marine facies, and the underlying deposits, which cover by age the Lower Cretaceous and the foot of the upper Cretaceous, are continental formations.

The study of the gradual replacement of sea sediments in the eastern direction by continental formations allowed to find out which marine sediments of a given stage of the Cretaceous system correspond to particular formations of continental sediments containing plant remains or devoid of them [7].

Continental Cretaceous deposits of the Shoshkakol anticline to the north off Zhaman-Tau transfer to the same-age formations of the southern Mugalzhar. However, the extremely poor exposure of both slopes, the southern Mugalzhar and the transgressive occurrence of the Paleogene, which in some places is located proper on the protruding Paleozoic and Precambrian rocks, does not allow to trace the continuation of the selected formations to the north and establish their direct relationship with the Mesozoic deposits of more northern regions.

The continental Mesozoic deposits of the Mugalzhar were studied in detail by P. L. Bezrukov and A. L. Yanshin (1937), who attributed a significant part of them to the Jurassic. But in the light of further research it turned out that the continental Mesozoic deposits of the southern Mugalzhar are more correctly to attribute in whole to the Lower Cretaceous, and within the northern Mugalzhar there are both Jurassic and Lower Cretaceous deposits.

Research methods and study materials of research. The object of the study is the compilation of toponyms in the area of Cretaceous deposits in the territory of Aktobe region. Layers of Cretaceous deposits occupy the western part of the region. This feature has caused the functioning of many toponymic terms in the region's toponymy.

The study used a descriptive method for a comprehensive disclosure of the topic, as well as a set of complementary methods: information search, analysis and systematization of scientific publications on the object and subject of research, comparative method, cartographic method. The basic research tools used were system analysis, qualitative and quantitative methods of collecting and processing information.

The reflection of environmental features in toponyms was analyzed in the research works of many foreign and Kazakh scientists. Among them the research was held on the geological and geographical features of the area as a factor of formation of toponyms [8], toponymic directions in geological studies [9], the specific character of toponyms formed in connection with physical and geographical features of the terrain [10], and the importance of toponymic research in landscape changes [11, 12, 13]. Living in a certain area people expressed the natural features of this area in the names, therefore researching the interconnection between names and named places reveals much information about the way people perceived, understood, and adapted the natural environment to their needs [14].

Result and Discussion.

The reflection of the Cretaceous deposits in the names. Toponyms that characterize the features of the geological structure of the territory can convey the information about the composition of geological rocks both directly and indirectly. Such toponyms can be considered as names that reflect the composition of geological rocks, reflect the color and are associated with mineral resources. These features can be identified by means of *words - terms* in the composition of toponyms.

On the whole territory of the region located to the west of the line running from Orsk along the foot of the Mugalzhar ridge and to the north-west off the Zhem river basin the Upper Cretaceous deposits are well exposed in the valleys of many rivers and streams, and even in watershed spaces. In the coastal zone of the Late Cretaceous sea, especially in the beginning, sandy and dust-like (silty) sediments were deposited, farther on from the coast - clay and calcareous silts were deposited. Now at the foot of the Mugalzhar and on the Or-Ileksky hill first are greenish-gray glauconite-quartz sands and sandstones, and even often with a layer of gravel and pebbles at the bottom, and above are silt and clay, and higher are already white marls and even writing chalk stone [15, 64]. Such features of the territory are reflected in toponyms with the words *bor (chalk), ak (white), kum (sand)*, etc.(figure 1).

On the territory, corresponding to the ancient Eastern European platform, toponyms with the word *ak (white)* predominate in the composition of toponyms characterizing the geological features of rocks. The meaning of the word *ak(white)* in toponyms has various meanings, for example, in the names of hydrographic items, in addition to indicating the color of water, it was used in the name of snow-fed water bodies. Among the Kazakh names of rivers most often you can find words beginning with the words *"ak"(white)* and *"kara"(black)*. It is widely believed that almost half of geographical network of Kazakhstan and adjacent regions of the Russian Federation consist of "white" ("ak") and "black" ("kara") rivers, streams, gullies, lakes. But it is quite definite that this name does not explain the local properties of geographical features. Therefore the name needs not only the translation but also the explanation of its origin [16, 47].

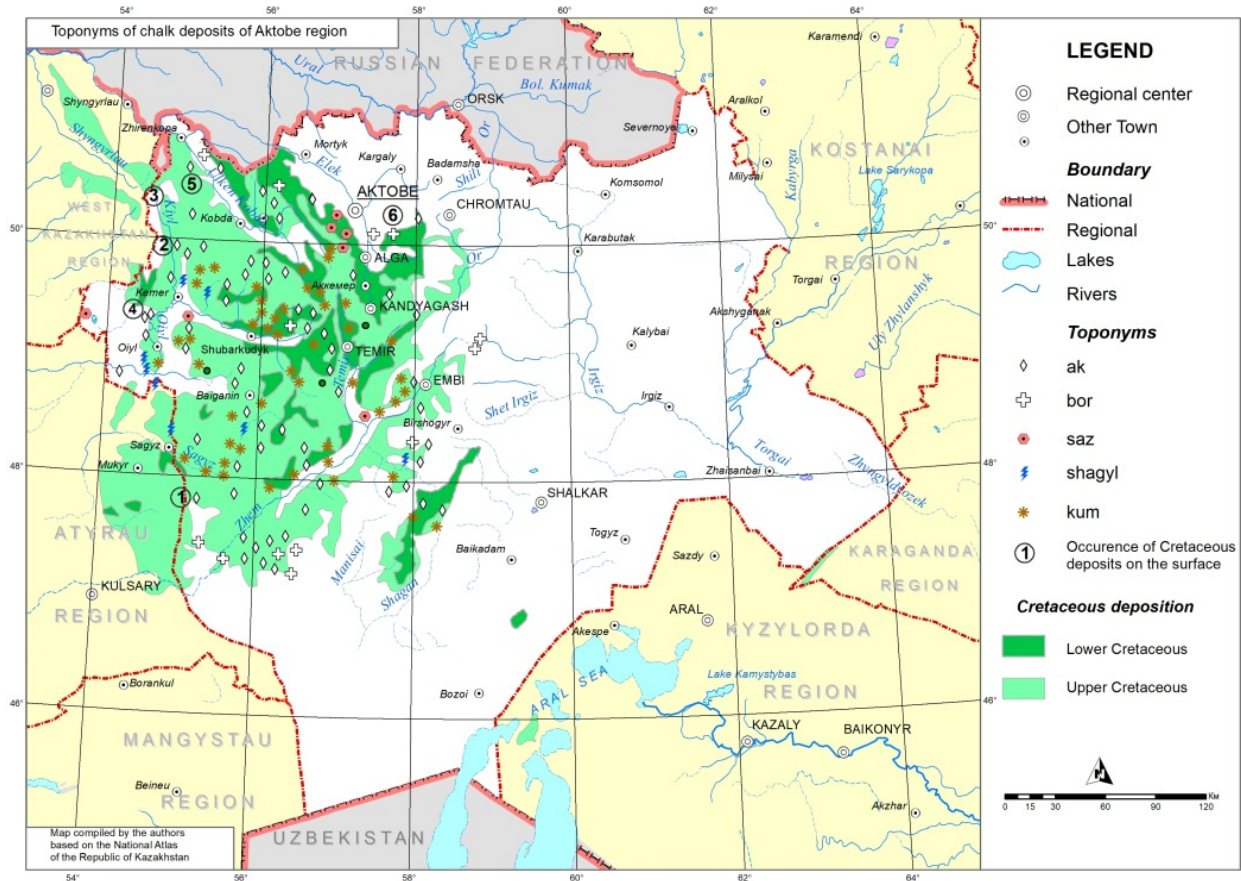


Figure 1 – Toponyms of chalk deposits of Aktobe region

Photos of areas as per marks on the map



Figure 1 – South Aktolagai (photo by the author)



Figure 2 – Akshatau (near Kiyi) (photo by the author)



Figure 3 –
Kobda (near the river Kiyl) (photo by the author)



Figure 4 –
Akshatau (Oiyl) (photo by the author)



Figure 5 –
Ushkaragantau (photo by Smelyanov)



Figure 6 –
Belogorka (quarry)

In our research, the word *ak* (*white*) as part of oronyms was used to describe the lithological specific nature of orographic objects, the color of rocks such as limestone and chalk. Some toponyms directly or indirectly define the composition of rocks, names with the word *ak* are found in other areas of Kazakhstan in the form of complex names *Aktau* (*South-Eastern Kazakhstan*) [17], *Akshoky*, *Aktas*, where veins of limestone, gypsum, marl, white marble, monoquartzite, barite and quartz occur. Such toponyms include the names of the fields *Aktasty* and *Akzhar* in Aktobe region. *Aktasty* is a limestone field, it was discovered in 1964 in the Khromtau district of Aktobe region and is located 27 kilometers off the city of Aktobe and *Akzhar*, located 16 kilometers northeast off the city of Aktobe and 4 kilometers north off the village of Akzhar, is a field where limestone is being produced [18]. Similar toponyms *Akshatau* (*mountain*), *Aktasty* (*mountain*), *Aktau* (*mountain, hill*), *Akshoky* (*mountain, depression in ground*), *Akkum* (*hill*), *Aktas* (*hill*), *Aktobe* (*mountain*) indicate a lithological feature of orographic objects, i.e. the presence of limestone, chalk deposits or gypsum rocks. It also proves that the *Aktolagay* mountains (located on the border of the Bayganinsky district and Atyrau region), *Akshatau* (Uilsky district) in the south-western area of Aktobe region, where the sea and the subsequent transgression of the Caspian sea took place during the geological Mesozoic, are named because of the color of their constituent rocks. *The Aktolagay plateau* is located in the Bayganinsky district of Aktobe region, near its border with Atyrau region, 440 km south-southwest off the city of Aktobe, 250 km east off the city of Atyrau, 9-10 km wide, stretches from North to South up to 50 km. From the point of view of its origin and morphology, *Aktolagay* is an original plateau, which is however smaller compared to the famous Ustyurt plateau. The surface plain of *Aktolagay* is bounded at its western end by a steep falling ledge, the depth of which sometimes reaches 140 m. A

reference section of the upper Cretaceous-Neogene structures for the entire Ural–Zhem oil region was studied on this bench. Geological strata in the gorges of the bench were formed at the bottom of the sea which extended to present-day Hungary. Snow-white chalk and limestone strata of Cretaceous origin are formed by the fossils of billions of very small ancient organisms. Here you can find quite large fossils, such as teeth of Cretaceous sharks, belemnites, as well as fossils of ammonites, marine animals, corals, sea lilies, sea urchins, etc. The hills surrounding the plateau are made up of gypsified clays, and also contain a large number of paleontological remains, and they are very impressive, as they are covered with placers of gypsum crystals that reflect in the sun [19]. Concerning the etymology of the name Aktolagay, the word "ak" (*white*) is associated with the description of the color of the object and the word "Tolagay" is synonymous with the word *tolgoi* in the Mongol-Buryat language, but having undergone phonetic changes, it has adapted to the Kazakh language and means "Top, hill, high mountain". Such names are common in Eastern Kazakhstan. For example: Tolagay Mountain (985m, 926m) (in Kokpekty and Zaisan districts). R. A. Segedin reports that the formation of the name *Aktolagay* is associated with carbonate remains of marl and white chalk [15].

Toponyms such as *Borly*, *Borzher*, *Melovoy*, made up by the term *bor* (*chalk*), which we consider together with the word *white*, provide the information about the concentration of rocks such as limestone, chalk, marl. A. A. Chibilev showed that the toponyms *Burtya*, *Burlya*, *Burlin*, *Borly* - *chalky* indicate the meaning of the word *chalk* [20]. We suppose that the toponym *Borte*, which is found on the territory of the region, must also come from the word *borly* (*chalky*).

Based on the state catalog of geographical names of Aktobe region and the topographic map of 1:500 000 scale 141 toponyms were selected with the terms *ak*, *bor*, *saz*, *kum*, *shagyl*, corresponding to the areas of Cretaceous deposits occurrence, which are classified in accordance with the types of oronyms, hydronyms, oikonoms, etc. (figure 3).

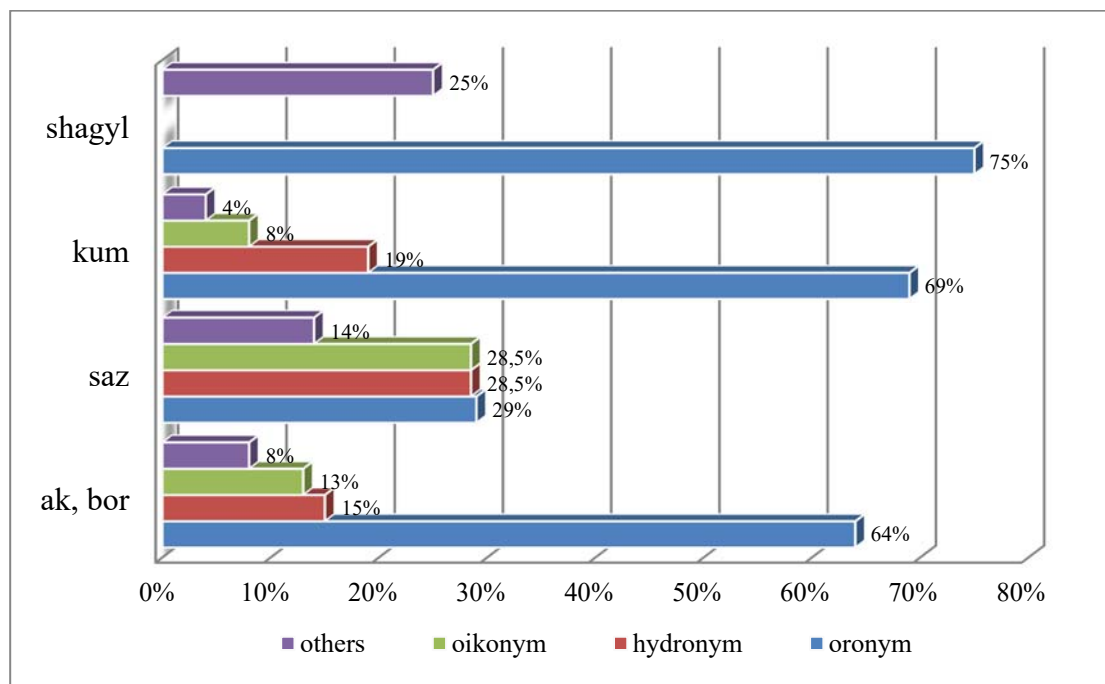


Figure 3 – The proportion of terms in toponyms

The analysis of the toponyms in the study area, as shown in figure 3, shows that the share of these terms is 65% in oronyms, 16% - in hydronyms, and 11% - in oikonoms.

Among toponyms there are also names that are repeated several times. Their concentration as per the type of orographic forms was summarized in table below.

The concentration of toponyms in the orographic units

Toponyms	Repetition rate	Division of names by orographic units				Others
		Names of mountains	Names of hills	Names of depressions	Names of settlements	
<i>Akzhar</i>	6			4		2
<i>Akkebek</i>	1	1				
<i>Akkemer</i>	2					2
<i>Aksai</i>	6	1		3		2
<i>Aktas</i>	2	1				1
<i>Aktau</i>	5		3		2	
<i>Aktolagai</i>	1	1				
<i>Aktorkil</i>	1	1				
<i>Aktumsyk</i>	1		1			
<i>Akungir</i>	3			1		2
<i>Akshat</i>	5		2	2	1	
<i>Akshatau</i>	3	2				1
<i>Akshukyr</i>	1					1
<i>Belogorka</i>	7	2	3		1	1
<i>Borzher</i>	3				3	
<i>Borly</i>	4		1			3
<i>Zhalgyzshagyl</i>	3					3
<i>Kumzhargan</i>	5			1	1	3
<i>Kumsai</i>	15			12		3
<i>Melovoi</i>	3		1		2	
<i>Sazdy</i>	5		1			4
<i>Kumbauyroba</i>	1	1				
<i>Kumdy</i>	2					2

The table is based on the state catalog of geographical names of Aktobe region [21].

It was found that the names of *Akzhar*, *Aksai*, *Aktau*, *Akshat*, *Borly*, *Belogorka*, *Kumsay* and *Kumzhargan* are more common in the names concentrated in oronyms. In addition more than 60% of the given toponyms correspond to the names of orographic items, such as a mountain, a hill, depressions and a settlement.

Conclusion. The following factors are the most important in the formation of geographical names in the study area: related to the color of chalk rocks (55%), geological - geomorphological (40%) and lithological features of the relief (5%). Among the toponyms the frequently repeated names *Akzhar*, *Aktau*, *Akshat*, *Belogorka*, *Borly* mainly correspond to exposed (exposed) parts of Cretaceous deposits. The past processes on the territory of Aktobe region during geological periods, especially in the Cenozoic, impacted the formation of the modern relief of the region. Names related to the color, composition and to water erosion of rocks are concentrated in areas where traces of ancient flooding of the East European platform and the Turan plate are covered by Paleogene deposits, where traces of Mesozoic floods and Cretaceous deposits protruding to the surface are preserved.

There are many examples of toponyms of Cretaceous deposits on the territory of Aktobe region, and it does not contribute to the effectiveness and ease of knowledge and understanding of its geological structure. Therefore the use of the toponymic method in the study of the etymology of the names of formations in the future opens the way to create a register of these names, clear up the history of their separation, authors and to some extent solve the problem of toponyms for future new geostratonyms. Thus, the practical significance of applying the toponymic approach to the study of stratigraphic nomenclature is primarily seen in the systematization of the nomenclature aspect of stratigraphy by introducing modern methods for collecting, processing, storing and updating geostratonymic information through the mechanism of GIS technologies – electronic banks and databases. The problems of geostratonymy open up a wide range of applying the toponymic approach in stratigraphy of any scale at the territorial level, primarily at the local and regional levels. It requires the organization and centralization of comprehensive research in this area.

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БАТЫС ҚАЗАҚСТАНДАҒЫ БОР ШӨГІНДІЛЕРІНІҢ ТОПОНИМДЕРІ (Ақтөбе облысы мысалында)

Аннотация. Мақалада Ақтөбе облысы аумағындағы бор шөгінділерінің таралуы және олардың жергілікті топонимдердегі бейнелену ерекшеліктерінің географиялық негіздері қарастырылды. Ақтөбе облысы Батыс Қазақстандағы жер бедерінің күрделілігімен сипатталады. Рельефтің ерекшеліктері оның геологиялық құрылымына және рельефті құрайтын факторларға байланысты.

Облыстың батыс бөлігінде таралған төменгі және жоғарғы бор шөгінділері қабаттарымен сәйкес келетін *ақ, бор, саз, құм, шағыл* сөздерімен жасалған топонимдер топтамасы картада көрсетілді. Зерттеу аумағындағы таңдап алынған 141 атаудың топонимдер құрамындағы ороним, гидроним, ойконимдер үлесі талданып, диаграмма жүзінде бейнеленді. Тау жыныстарының құрамы, түсі сияқты физикалық қасиеттерінің топонимдердегі көрінісін дәлелдейтін *Ақтолағай, Ақшатау, Белогорка, Ақтау, Ақжар* т.б. атауларға талдау жасалды және олардың қайталану жиілігі анықталып, нәтижесі кесте түрінде көрсетілді. Жалаңаштанған бор шөгінділері қабаттарына сәйкес келетін географиялық нысандардың орны картада белгіленіп, фотосуреттері берілген.

Түйін сөздер: бор шөгінділері, геологиялық ерекшелік, Ақтөбе облысы, топонимдер.

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ТОПОНИМЫ МЕЛОВЫХ ОТЛОЖЕНИЙ ТЕРРИТОРИИ ЗАПАДНОГО КАЗАХСТАН (на примере Актюбинской области)

Аннотация. В статье рассматриваются вопросы залегания меловых отложений на территории Актюбинской области и географические основания их отражения в местных топонимах. Актюбинская область характеризуется сложностью рельефа в Западном Казахстане. Особенности рельефа зависят от его геологического строения и рельефообразующих факторов.

На карте была представлена группа топонимов со словами *ақ, бор, саз, құм, шағыл*, совпадающие со слоями нижнемеловых и верхнемеловых отложений, распространенных в западной части области. Проанализирована и отражена на диаграмме доля оронимов, гидронимов, ойконимов в составе топонимов 141 избранных наименований в области исследования. Проведен анализ наименований *Актолағай, Ақшатау, Белогорка, Ақтау, Ақжар* и др., свидетельствующие о проявлении в топонимах таких физических свойств горных пород, как состав, цвет и определена частота их повторения, результаты представлены в виде таблицы. На карте обозначено положение географических объектов, соответствующих слоям обнаженных меловых отложений, даны фотографии.

Ключевые слова: меловые отложения, геологические особенности, Актюбинская область, топонимы.

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