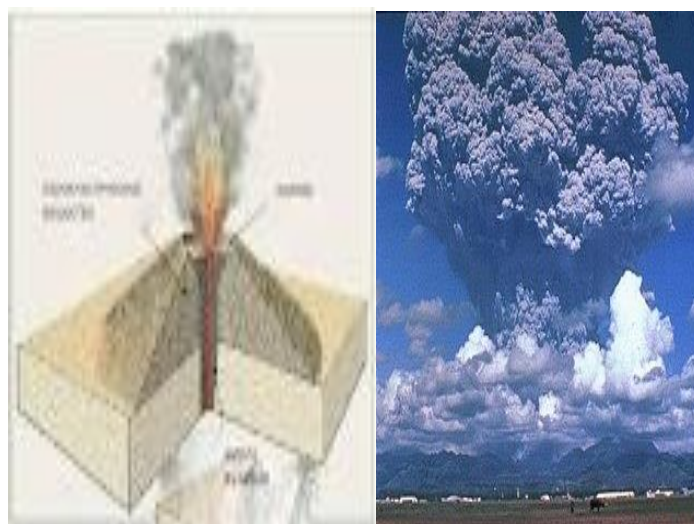


GULISTAN STATE UNIVERSITY

**INTERNAL (ENDOGENOUS) AND EXTERNAL (EXOGENOUS)
GEODYNAMIC PROCESSES OF THE EARTH**

**YERNING ICHKI (ENDOGEN) VA TASHQI (EKZOGEN)
GEODINAMIK JARAYONLARI.**



Gulistan - 2025

Toshbekov O‘. Internal (endogenous) and external (exogenous) geodynamic processes of the Earth (Yerning ichki (endogen) va tashqi (ekzogen) geodinamik jarayonlari) – Gulistan, 2025.- 20. p.

Ushbu ma’ruza matni Geologiya va mineralogiya fanidan o‘tiladigan “Yerning ichki (endogen) va tashqi (ekzogen) geodinamik jarayonlari” mavzusiga bag‘ishlangan bo‘lib, unda Tektonik xarakatlar va tektonik strukturalar. Tog’ jinslarining deformatsiyasi, zilzila. effuziv magmatizm - vulkanizm, nurash jarayonlari. shamolning geologik ishi kabi ichki (endogen) va tashqi (ekzogen) geodinamik jarayonlari to‘g‘risidagi ma‘lumotlar ingliz va o‘zbek tillarida bayon etilgan hamda asosiy atamalar izohi–glossariy keltrilgan. Ma’ruza 1 -bosqich Agrokimyo va tuproqshunoslik ta’lim yo‘nalishi talabalariga mo‘ljallangan.

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INTERNAL (ENDOGENOUS) AND EXTERNAL (EXOGENOUS) GEODYNAMIC PROCESSES OF THE EARTH YERNING ICHKI (ENDOGEN) VA TASHQI (EKZOGEN) GEODINAMIK JARAYONLARI

Purpose: To teach students about tectonic movements and tectonic structures, deformation of rocks, earthquakes. effusive magmatism - volcanism, weathering processes. provide information about internal (endogenous) and external (exogenous) geodynamic processes, such as the geological work of wind

Maqsad: Talabalarga Tektonik xarakatlar va tektonik strukturalar, tog' jinslarining deformatsiyasi, zilzila. effuziv magmatizm - vulkanizm, nurash jarayonlari. shamolning geologik ishi kabi ichki (endogen) va tashqi (ekzogen) geodinamik jarayonlari to'g'risida ma'lumot berish

PLAN:

1. Tectonic movements and tectonic structures.
2. Understanding of endogenous processes.
3. Earthquake. Effusive magmatism is volcanism.
4. Understanding of exogenous processes.
- 5 Weathering processes.
6. Geological work of wind, water currents, underground water, glaciers, seas and oceans, lakes and swamps

REJA:

1. Tektonik xarakatlar va tektonik strukturalar.
2. Endogen jarayonlar haqida tushuncha.
3. Zilzila. Effuziv magmatizm - vulkanizm.
4. Ekzogen jarayonlar haqida tushuncha.
5. Nurash jarayonlari.
6. Shamolning, suv oqimlarining, yer osti suvlari, muzliklar, dengiz va okeanlar, ko'l va botqoqlarning geologik ishi.

1.TECTONIC MOVEMENTS AND TECTONIC STRUCTURES.

A set of processes such as earthquakes is called tectonic movements. Tectonic movements are continuous, that is, their intensity sometimes increases and sometimes decreases during geological time. They take the leading place in the relief of the earth's crust, the formation of continents, and the paleogeographic development of the Earth in general.

In the history of the earth's development, epochs of mountain folding are distinguished, when strong tectonic movements that create mountains took place. For example, the Baikal mountain fold occurred at the end of the Proterozoic and the beginning of

the Paleozoic, the Caledonian and Hyersin mountain folds occurred in the middle and end of the Paleozoic, the Kimmerian mountain fold occurred in the Mesozoic era, and the Alpine mountain fold occurred in the Cenozoic era. Tectonic movements are divided into the oldest, ancient, new (neotectonic) and modern tectonic movements.

Tectonic movements in the earth's crust change the initial orientation of the stratified or non-stratified aggregates. Layers are folded from lateral compression, and due to vertical force, they break, create cracks, split into pieces, and finally, one part may rise and the other part may sink.

Changes in the shape and integrity of layers depend on internal movement. This movement causes subsidence, uplift, folding, earth cracks, displacement of large plates and other tectonic structures. Tectonic movements are divided into two types – orogenic and epeirogenic movements. Orogenic movements, in turn, are divided into plicative (folding) and vadijunctive (disruptive) types. Epeirogenic (oscillation) movements are expressed in the age-old vibration of the earth's crust.

In addition to the vertical (vertical) movement of the earth's crust, horizontal movement is also observed. For example, the Pamir mountains are slowly moving from south to north by two to three cm per year.

Geological phenomena that have occurred in the earth's crust and are still occurring today are divided into endogenous and exogenous processes.

Neotectonic and modern tectonic movements are manifested in volcanic eruptions and earthquakes (see chapter on earthquakes). At the beginning of the Quaternary period, the rifting of the earth formed lakes Victoria and Tanganyika, the Red Sea and the Dead Sea in Africa. Lake Baikal on the territory of Russia is also considered to have been formed during the anthropogenic period.

Due to neotectonic movements, the main relief forms of the land and ocean bottoms of the present era: mountains, plains, river valleys appeared. We can directly study modern tectonic movements and measure their value using instruments. The same direction can be determined. For example: vertical movements can be positive – rising and negative – falling.

1. TEKTONIK XARAKATLAR VA TEKTONIK STRUKTURALAR.

Zilzilalar qabilida kechadigan jarayonlar majmvasi tektonik harakatlar deyiladi. Tektonik harakatlar uzlukli-uzluksiz ravishda kechadi, ya'ni uning intensivligi geologik vaqt davomida goh kuchayib, goh susayib turadi. Ular yer po'stining reliefi, matyeriklarning paydo bo'lishi, umuman Yerning paleogeografik taraqqiyotida yetakchi o'rinda turadi.

Yer taraqqiyoti tarixida tog' hosil qiluvchi kuchli tektonik harakatlar ro'y byergan tog' burmalanishi epoxalari ajratiladi. Masalan, Baykal tog' burmalanishi protyerozoyni oxiri-paleozoyning boshlanishida, Kaledon va Gyersin tog' burmalanishlari paleozoyning o'rtasida va oxirida, kimmyeriy tog' burmalanishi mezozoy yerasida, Alp tog' burmalanishi esa kaynozoy yerasida sodir bo'lgan. Tektonik harakatlar eng qadimgi, qadimgi, yangi (neotektonik) va hozirgi zamon tektonik harakatlariga bo'linadi.

Yer po'stidagi tektonik harakatlar qatlam yoki qatlamsiz yaxlit yotqiziqlarning dastlabki yotishini o'zgartiradi. Qatlamlar yon tomonidan siqilishidan burmalanadi, tik ta'sir qilgan kuchdan esa, sinadi, darzlar hosil qilib, bo'laklarga ajraladi va nihoyat bir qismi ko'tarilib, ikkinchi qismi cho'kishi mumkin.

Qatlamlarning shakli va yaxlitligining o'zgarishi ichki harakatga bog'liqdir. Bu harakatdan cho'kish, ko'tarilish, burmalanish, yer yorilishi, katta - katta palaxsalarining siljishi va boshqa xil tektonik strukturalar vujudga keladi. Tektonik harakatlar ikki xil - orogen va epeyrogen harakatlarga bo'linadi. Orogen harakatlar o'z navbatida plikativ (burmalanish) vadiz'yunktiv (uzilma) turlarga ajratiladi. Epeyrogen (tebranma) harakatlar yer po'stining asriy tebranishida o'z ifodasini topgan

Yer po'stining tik (vyertikal)tebranish harakatidan tashqari gorizontal harakat ham kuzatiladi. Masalan Pomir tog'lari janubdan shimol tomon asta sekin yiliga ikki uch cm siljimoqda.

Yer po'stidagi bo'lib o'tgan va hozirgi kunlarda ham sodir bo'layotgan geologik hodisalar ikkiga endogen hamda egzogen jarayonlarga bo'linadi.

Neotektonik va hozirgi zamon tektonik harakatlar vulkan otilishi, zilzila harakatlarida namoyon bo'ladi (zilzila bobiga karang). To'rtlamchi davrning boshlarida yer yorilishidan Afrikadagi Viktoriya va Tanganika ko'llari, Qizil dengiz va O'lik dengizlar hosil bo'lgan. Rossiya hududidagi Baykal ko'li ham antropogen davrida xosil bo'lgan deb hisoblanadi.

Neotektonik harakatlar tufayli hozirgi davrdagi quruqlik va okean tublaridagi asosiy rel ef shakllari: tog'lar, tekisliklar, daryo vodiylari paydo bo'lgan. Hozirgi zamon tektonik harakatlarini bevosita o'rganishimiz va asboblari orqali ularning qiymatini o'lchashimiz mumkin. SHu kabi yo'nalishini ham aniqlash mumkin. Masalan: vetikal harakatlar musbat – ko'tariluvchi va manfiy –cho'kuvchi bo'lishi mumkin.

2. CONCEPT OF ENDOGENOUS PROCESSES

Endogenous processes (from the Greek word "genos" in the endo-inside part means emergence, birth). The development of substances in the inner parts of the earth's crust or in its upper layers. This developing force is caused by the decay of radioactive elements, chemical reactions of various nature, transition of substances from one aggregate state to another identical aggregate state, and similar processes. Such processes are caused by magmatic events, tectonic movements and metamorphism events in rocks.

Endogenous geological processes include those in house q: Volcanism, movement of the earth's crust - epeirogenesis, the process of mountain formation - orogenesis, and the resulting earthquakes. Young tectonic movements begin from the Holocene period, that is, from the millennium. The tectonic movements of the Neogene and Quaternary periods and the structures formed by them are studied by the field of geology called neotectonics. Due to tectonic movements, Neogene and Quaternary deposits were exposed, folded structures were formed, and there are places where residual relief forms, such as the surfaces of ancient plains, are found on the heights. Disrupted and disconnected areas of the Quaternary deposits are found in the Norin River Valley and other places in the Karajan Mountains. The fact that the ancient plains remain between high mountains indicates that the neotectonic movement has taken place. Neotectonic and modern tectonic movements, volcanic eruptions and earthquake movements are invisible.

2. ENDOGEN JARAYONLAR HAQIDA TUSHUNCHA

Endogen jarayonlar (grekcha so'z bo'lib, endo-ichkari qismda «genos» paydo bo'lish, tug'ilish demakdir). Yer qobig'ining ichki qismlarida yoki uning yuqori qatlamlaridagi moddalarning rivoji. Bu rivojlantiruvchi kuch radioaktiv elementlarining

parchalanishi, har xil tabiatga ega bo'lgan kimyoviy reaksiyalar, moddalarning bir agregat holidan ikkinchi bir xil agregat holiga o'tishdan va shunga o'xshash jarayonlar sodir bo'lishidan kelib chiqadi. Bunday jarayonlarni keltirib chiqarishda magmatik hodisalar, tektonik harakatlar va tog' jinslarida bo'lib o'tadyugan metamorfizm hodisalari sabab bo'ladi.

Endogen geologik jarayonlarga quyidagilar kiradi: Vulqonizm, yer qobig'ining tebranishi harakati -epeyrogenez, tog' paydo bo'lish jarayoni orogenez va shu sababli hosil bo'ladigan yer qimirlashlar. Yosh tektoptik harakatlar golosen davridan ya'ni minginchi yildan boshlanadi. Neogen va to'rtlamchi davrlardagi tektonik harakatlarni va ular hosil qilgan strukturalarni geologiyaning neotektonika deb ataluvchi sohasi o'rganadi. Tektonik harakatlar tufayli neogen, to'rtlamchi davr yotqiziqlariga dars ketgan, bukilgan strukturalar hosil bo'lgan va balandliklarda qadimgi tekisliklarni yuzalari kabi qoldiq relf shakillari uchraydigan joylar mavjud. To'rtlamchi davr yotqiziqlarining dars ketgan va uzilgan joylari Qorajon to'vda Norin daryosi vodiysida va boshqa joylarda uchraydi. Qadimgi tekisliklarning baland tog' oralig'ida qolib ketishi neotektonik harakat kechganligidan darak beradi. Neotektonik va hozirgi zamon tektoptik harakatlar vulqon otilishi zilzila harakatlari nomiyon bo'ladi.

3. General information about the earthquake

A sudden earthquake in some places of the earth's crust under the influence of tension directed from the interior of the earth to the surface is called an earthquake. An earthquake is one of the most dangerous natural phenomena.

Areas with mountainous relief are the most active areas. China, Japan, Chile, Peru, Central Asia are among them. Earthquakes that caused the greatest damage and killed thousands of people took place in these places.

Earthquake phenomenon is studied by the science of seismology. An earthquake occurs during the sorting process of substances in the lower part of the earth's crust, including the mantle. The t-wave movements generated in this case spread from the center of the earthquake to the surroundings and along the surface of the earth. Even after the initial movement of the earthquake, some parts of the earth's crust continue to vibrate for a certain period of time due to the excess energy stored in the ground. Vibration of the Earth's surface is caused by the impact of elastic waves passing through the inner layers.

In the analysis of earthquakes, earthquake focus, hypocenter, epicenter, isoseist and other concepts are used.

An earthquake source is a volume of rock that is subject to instantaneous failure at the bottom of the earth.

The center of an earthquake inside the earth is the hypocenter, and its projection on the surface of the earth is called the epicenter. Isoseist is a line of equal strength of vibrations.

The strength of an earthquake is reflected in our daily life in terms of points:

I score. The earthquake is not felt. The strength of the earth's vibration does not reach the level that humans can perceive. It can be determined only with the help of special devices that record vibrations - seismographs.

II score. An earthquake is barely felt. The power of the earthquake can be felt by some people who are stationary inside the building, especially on the upper floors.

III score. The earth shakes weakly. An earthquake is felt by some of the people inside the building, and only by those who are standing in the open. The vibration sounds as if a truck has passed a certain distance. Sinchkov was in an observant state it absorbs the light vibration of objects, the vibration is relatively stronger on the upper floors of buildings.

IV score. Noticeable vibration is noted. Most of the people inside the building notice it, but only a few people in the open. Sometimes even those who are sleeping wake up. House windows, doors, dishes vibrate slightly. Suspended equipment vibrates. There is splashing in the liquids in the dishes. It can also be felt by people in a parked vehicle.

V score. Sleepy people wake up with fear. The earthquake is felt by all the people inside the building. Some run out into the street. Animals are disturbed. The clock stops. Certain items that do not have a solid base will fall or slide. Doors and windows that are not properly fastened open and close. Liquids in containers shake strongly, partially spill.

VI score. People are afraid. The earthquake is felt by all the people inside the building and outdoors. People run out of the house. People in motion lose their balance. Animals become restless. Sometimes glass items can break, books on the shelves can fall. Heavy furniture is moved.

VII score. Buildings will be damaged. Many people have a strong fear. Even those who drive a car feel it. Landslides and landslides occur in hilly and mountainous regions. Waves appear on the surface of the water and become cloudy. Changes in the level and quantity of well water are observed. Cases of groundwater leakage are recorded.

Score VIII. Buildings are heavily damaged. People are filled with fear and confusion. Tree branches break, several centimeter cracks appear in the soil. New water bodies are created. Pipes break from their welds. Statues and monuments are displaced. Groundwater movement changes dramatically. New springs will appear.

Score IX. Buildings are completely damaged. The entire population is in a state of panic. Animals make loud noises and move erratically. Underground pipelines are broken, railways are bent, water structures are damaged. Cracks up to 10 cm appear in the soil. Rocks slide, landslides occur. Statues and pillars fall down.

Score X. Structures: reservoirs, dams, bridges will be completely destroyed. The earth's surface cracks, wavy ups and downs appear. Underground structures will be destroyed. Rocks are broken. In the canals, lakes and rivers, the water flows strongly, and new water bodies appear.

Score XI. Disadvantaged. Carefully constructed structures: bridges, houses, dams, railways will be seriously damaged. Deformations such as wide cracks, breaks, and shifts are observed on the surface of the earth. Strong landslides occur in mountainous regions.

XII score. Deadly. The topography of the earth will change completely, all above-ground and underground structures will be completely damaged. Cracks appear. Rivers come out of their beds. Large landslides occur. New lakes are formed. This 12-point scale is being further refined through further research.

3. Zilzila haqida umumiy ma'lumotlar

Yerning ichki qismidan sirtiga tomon yo'nalgan kuchlanish ta'sirida yer po'stining ayrim joylarida t o'satdan yer silkinishiga zilzila deyiladi. Zilzila -tabiatda sodir bo'ladigan eng xavfli hodisalarning biridir.

Tog'li relefga ega bo'lgan xududlar eng seymofaol hududlar hisoblanadi. Xitoy, Yaponiya, Chili, Pyeru, O'rta Osiyo shular jumlasidandir. Bu joylarda eng yirik talofatlarga olib kelgan va minglab odamlarning hayotiga zomin bo'lgan zilzilalar sodir bo'lgan.

Zilzila hodisasini seymologiya fani o'rganadi. Zilzila yer po'stining ostki qismidagi, jumladan, mantiyadagi moddalarning saralanish jarayonida vujudga keladi. Bunda hosil bo'lgan tebranma to'liqlik harakatlar zilzila markazidan atrofga va yer yuzasi bo'ylab tarqaladi. Zilzilaning dastlabki harakatidan keyin ham yer ichida saqlanib qolgan ortiqcha energiya evaziga yer po'stining ayrim qismlari ma'lum vaqtgacha bot-bot tebranib turadi. Yer sirtining tebranishi, unga ichki qatlamlardan o'tib keluvchi elastik to'liqlarning urilishidan kelib chiqadi.

Zilzilalarni tahlil qilishda zilzila o'chog'i, gipotsentr, epitsentr, izoseyst va boshqa tushunchalardan foydalaniladi.

Zilzila o'chog'i – bu yer qat'ida oniy buzilishga uchraydigan tog' jinslarining hajmi.

Yer ichidagi zilzila markazi - gipotsentr, uning yer yuzasidagi proektsiyasi - fokusi epitsentr deb ataladi. Izoseyst – tebranishlar kuchi teng bo'lgan chiziq.

Zilzilaning kuchi ballar bo'yicha kundalik hayotimizda quyidagilarda aks etadi:
I ball. Zilzila sezilmaydi. Yer tebranishining kuchi insonlar sezadigan darajaga etmaydi. Uni faqat tebranishni qayd qiluvchi maxsus asboblarda -seymograflar yordamida aniqlash mumkin.

II ball. Zilzila arang seziladi. Zilzila kuchini binoning ichida harakatsiz holatda bo'lgan, ayniqsa yuqori qavatlardagi ayrim insonlar sezishi mumkin.

III ball. Yer kuchsiz tebranadi. Zilzilani bino ichida bo'lgan insonlarning ayrimlari, ochiq joyda bo'lganlardan faqat tinch holatda turganlarga sezadi. Tebranish go'yoki ma'lum masofada yuk mashinasi o'tgandek tuyuladi. Sinchkov kuzatuvchi ocma holatda bo'lgan buyumlarning engil tebranishini ilg'ab oladi, binolarning yuqori qavatlarida tebranish nisbatan kuchliroq bo'ladi.

IV ball. Sezilarli tebranish qayd etiladi. Bino ichida bo'lgan insonlarning aksariyat qismi, ochiq joydagilarning ozchiligi sezadi. Ba'zan uyqudagilar ham o'yg'onadi. Uy deryazalari, eshiklar, idishlar engil titraydi. Ocma holatda bo'lgan anjomlar tebranadi. Idishlardagi suyuqliklarda chayqalish kuzatiladi. Uni to'xtab turgan avtotransportdagilar ham sezishi mumkin.

V ball. Uyqudagi kishilar qo'rquv aralash uyg'onib ketadi. Zilzilani bino ichidagi insonlarning barchasi sezadi. Ayrimlar ko'chaga qochib chiqadi. Hayvonlar bezovta bo'ladi. Ocma soatlar to'xtab qoladi. Mustahkam asosga ega bo'lmagan ayrim buyumlar qulab tushadi yoki suriladi. Yaxshi mahkamlanmagan eshik va deryazalar ochilib-yopiladi. Idishlardagi suyuqliklar kuchli chayqaladi, qisman to'kiladi.

VI ball. Insonlarni qo'rquv bosadi. Zilzilani bino ichidagi va ochiq joydagi insonlarning barchasi sezadi. Odamlar uydan tashqariga qochib chiqishadi. Harakatdagilar muvozanatini yo'qotadi. Hayvonlarda bezovtalik kuchayadi. Ba'zan shisha buyumlar sinishi mumkin, javondagi kitoblar tushib ketadi. Og'ir mebellar suriladi.

VII ball. Binolar shikastlanadi. Ko'pchilik insonlarda qattiq qo'rquv paydo bo'ladi. Avtoular boshqarayotganlar ham uni sezadi. Tepalik va tog'oldi xududlarida

ko'chki, o'pirilish sodir bo'ladi. Suv yuzasida to'lqinlar paydo bo'lib, loyqalanadi. Qudug suvlarining sathi, miqdori o'zgarishi kuzatiladi. Yerosti suvlari sizib chiqish hollari qayd qilinadi.

VIII ball. Binolar kuchli shikastlanadi. Insonlarni qo'rquv va sarosima bosadi. Daraxt shoxlari sinadi, tuproqda bir necha santimetrli darzliklar paydo bo'ladi. Yangi suv havzalari vujudga keladi. Quvurlar payvandlangan joylaridan uzilib ketadi. Haykallar va yodgorliklar joyidan siljiydi. Yerosti suvi harakati keskin o'zgaradi. Yangi buloqlar paydo bo'ladi.

IX ball. Binolar batamom shikastlanadi. Aholining barchasini vahima bosadi. Hayvonlar kuchli ovoz chiqarib, betartib harakat qiladi. Yerosti quvurlari uziladi, temir yo'llar qiyshayadi, suv inshootlari shikastlanadi. Tuproqda 10 cm gacha darzliklar paydo bo'ladi. Qoyalar qulaydi, ko'chkilar yuzaga keladi. Haykallar, ustunlar qulab tushadi.

X ball. Inshootlar: suv omborlari, to'g'onlar, ko'priklar batamom buziladi. Yer yuzasi yoriladi, to'lqinsimon past-balandliklar paydo bo'ladi. Yer osti inshootlari buziladi. Qoyalar o'piriladi. Kanal, ko'l va daryolarda suvlar kuchli chayqaladi, yangi suv havzalari paydo bo'ladi.

XI ball. Talofatli. Puxta qurilgan inshootlar: ko'priklar, uylar, to'g'onlar, temir yo'llar jiddiy shikastlanadi. Yer yuzasida keng yoriqlar, uzilish, siljish kabi deformatsiyalar kuzatiladi. Tog'oldi xududlarida kuchli ko'chkilar yuzaga keladi.

XII ball. Halokatli. Yerning relefi butunlay o'zgaradi, barcha yerusti va yerosti inshootlari to'liq shikastlanadi. Yoriqlar paydo bo'ladi. Daryolar o'zanidan chiqadi. Yirik tog' ko'chkilari sodir bo'ladi. Yangi ko'llar vujudga keladi.

Ushbu 12 balli shkala keyingi izlanishlar davomida tobora takomillashtirilib borilmoqda.

Effusive magmatism is volcanism

A set of processes connected with the movement of magma on the surface of the Earth's crust is called effusive volcanism.

Volcanic products. Depending on the physical and chemical composition, the products that erupt or pour out of the volcano are: gaseous, solid and liquid.

Types of volcanoes. As a result of continuous observation and examination of volcanic processes and products, it was found that the composition is different. Therefore, volcanoes are divided into the following groups according to the composition of their products.

1. Volcanoes in the Hawaiian group.
2. Volcanoes in the Strambalchi group.
3. Vesuvius- Etna group of volcanoes.
4. Man-Pele volcanoes.
5. Volcanoes of the Bandisan group.

Effuziv magmatizm – vulkanizm

Yer po'sti yuzasida magma harakati bil an bog'liq bo'lgan jaroyonlar yig'indisiga effuziv vulqonizm deyiladi.

Vulqon mahsulotlari. Vulqondan otilib yoki quyulib chiquvchi mahsulotlar fizik va kimyoviy hossalarga qarab: gazsimon, qattiq va suyuq bo'ladi.

Vulqon tiplari. Vulqon jaroyonlari va mahsulotlarini muttasil kuzatish va tekshirish natijasida tarkibi har xil ekanligi aniqlangan. Binobarin, vulqonlar mahsulotlarining tarkibiga ko'ra quyidagi guruhlariga bo'linadi.

1. Gavayi guruhidagi vulqonlar.
2. Strambalchi guruhidagi vulqonlar.
3. Vezuviy- Etna guruhidagi vulqonlar.
4. Man- Pele guruhidagi vulqonlar.
5. Bandaysan guruhidagi vulqonlar.

Geographic distribution of volcanoes

The study of volcanoes around the globe has shown that volcanism and the history of the earth's crust are very closely related. Currently, there are more than 300 known active volcanoes. In 1974, as a result of surveys of the oceans, it was found that volcanoes are located in a certain direction when the land and the ocean are studied. They are mainly in two directions, the first is called the Pacific ring. Starting from the Kamchatka Peninsula, this volcanic ring continues southwest through the Kuril Islands. It passes through Japan, Philippines, New Guinea and extends to New Zealand. In the eastern part of the Pacific Ocean, it passes from the island of fire in the south of the American mainland to the north and past the Cordillera mountains, and it goes north to the Alaskan peninsula and the Kamchatka peninsula. This volcanic ring is called the Pacific Geosynclinal Zone.

Vulqonlarning geografik tarqalishi

Yer sharidagi vulqonlarni o'rganish vulqonizm bilan yer po'stining rivojlanish tarixi juda yaqin aloqada ekanligini ko'rsatdi. Hozirgi vaqtda ma'lum bo'lgan harakatdagi vulqonlar 300 dan ortiq. 1974 – yilda okeanlarni tekshirishlar natijasida vulqonlar quruqlik va okean o'rganilganda ma'lum bir yo'nalishida joylashganligi aniqlanilgan. Ular asosan ikki yo'nalishda bo'lib, birinchisi Tinch okean halqasi deb ataladi. Kamchatka yarim orolidan boshlangan va bu vulqon halqasi Kurill orollari orqali janubig'arbgatomon davom etadi. Yaponiya, Filippin, Yangi Gvin eyadan o'tib, Yangi Zellandiyagacha cho'zilib boradi. Tinch okeanning sharqida Amyerika matyerigining janubidagi olovli yer orolidan shimol tomonga va Kordilyera tog'larining yonidan o'tadi va shimoldan Al eut orollari va Alyaska orqali yana Kamchatka yarim oroliga borib tutashadi. Bu vulqon halqasi Tinch okean geosinklinal xududi deb yuritiladi.

4. Exogenous processes

Endogenous forces are constructive, while exogenous forces are destructive. For example, if endogenous forces create all the irregularities of the earth's surface, exogenous forces try to smooth them.

Exogenous (Greek - exo - external, depon - origin, emergence) processes are natural phenomena occurring on the surface of the Earth, the source of which is solar energy. Exogenous processes are also natural phenomena that occur as a result of the interaction of the lithosphere with the atmosphere, hydrosphere and biosphere

Exogenous processes mainly change the surface of the Earth's crust. All exogenous processes erode rocks (weathering, erosion, denudation, abrasion, erosion), transport (transport) and accumulate (accumulate) eroded rocks. Due to these natural phenomena, the

relief of the earth's surface is smoothed. But the activity of exogenous processes is determined by endogenous processes in many cases, and both are manifested based on the law of the struggle and unity of opposites. For example, the faster and higher the mountains (volcanic, tectonic) rise, the faster their erosion. In this case, there is an exchange of matter and energy in the earth's crust: the mountains are eroding and falling, and the plains are filled with sedimentary rocks and begin to rise. The existing balance in the Yrr crust may be disturbed, tectonic movements will go into a new phase of activation, volcanoes may move, and terrible earthquakes may occur.

So, these two forces develop in a dynamic unity. Therefore, the methodological basis of geological-geomorphological research works is the analysis of the mutual ratio of endogenous and exogenous forces.

All natural phenomena occurring on the surface of the earth's crust under the influence of solar energy and other external forces are called exogenous processes.

Exogenous processes can be divided into two large groups: terrestrial and aquatic processes. Exogenous processes on land include precipitation, wind, temporary and permanent streams and glaciers, sea and ocean waters, lakes and wetlands, and groundwater activities in aqueous environments.

4. Ekzogen jarayonlar

Endogen kuchlar bunyod etuvchi xususiyatga ega bo'lsa, ekzogen kuchlar barbod etuvchi vazifasini bajaradi. Masalan endogen kuchlar yer yuzasining barcha notekisliklarini bunyod etsa, ekzogen kuchlar ularni tekislashga harakat qiladi.

Ekzogen (yunoncha - exo - tashqi, depon - kelib chiqish, paydo bo'lish) jarayonlar Yer yuzasida sodir bo'ladigan tabiiy hodisalar bo'lib, ularni harakatga keltiruvchi manba quyosh enyergiyasidir. SHuningdek ekzogen jarayonlar litosfyeraning atmosferaga, gidrosfyeraga va biosfyeralar bilan o'zaro ta'siri natijasida sodir bo'ladigan tabiiy hodisalardir.

Ekzogen jarayonlar asosan yer po'stining yuza qismini o'zgartiradi. Barcha ekzogen jarayonlar tog' jinslarini emiradi (nurash, yeroziya, denudatsiya, abraziya, ekzaratsiya), emirilgan jinslarni tashiydi (ko'chiradi) va to'playdi (akkumulyasiya). Ana shu tabiiy hodisalar tufayli yer yuzasining reliefini tekislaydi. Lekin ekzogen jarayonlarning faolligini ko'p holatlarda endogen jarayonlar belgilab byeradi va har ikkalasi qarama-qarshiliklar kurashi va birligi qonuni asosida namoyon bo'ladi. Masalan, tog'lar (vulkanik, tektonik) qanchalar tez va baland ko'tarilsa, ularning emirilishi shunchalar tezlashadi. Bunda yer po'stida modda va enyergiya almashinuvi kuzatiladi: tog'lar emirilib, pasaya boradi,

tekisliklar esa, cho'kindi jinslar bilan to'lib, ko'tarila boshlaydi. Yrr po'stidagi mavjud muvozanat buzilib, tektonik harakatlar yangidan faollashish bosqichiga o'tib, vulkanlar harakatlanishi, dahshatli zilzilalar sodir bo'lishi mumkin.

Demak, bu ikkala kuchlar o'zaro dinamik birlikda rivojlanadi. Shuning uchun ham geologik - geomorfologik tadqiqot ishlarining uslubiy asosi endogen va ekzogen kuchlarining o'zaro nisbatini tahlil qilish hisoblanadi.

Quyosh enyergiyasi va boshqa tashqi kuchlar ta'sirida sodir bo'ladigan yer po'stining yuza qismidagi barcha tabiiy hodisalarni ekzogen jarayonlar deb ataladi.

Ekzogen jarayonlarni ikkita yirik guruhga: quruqlikdagi va suvli muhitdagi jarayonlarga ajratish mumkin. Quruqlikdagi ekzogen jarayonlarga nurash, shamol, vaqtincha va doimiy oqar suvlar va muzliklar, suvli muhitdagilarga dengiz va okean suvlari, ko'l va botqoqliklar, yerosti suvlarining faoliyati tegishlidir.

5. Weathering processes

The environment of sediment formation is multifactorial, in which the climate, topography and geotectonic order of the region are important. The change of each of them has a dramatic effect on the characteristics of the sediment formation process. Therefore, the weathering process takes place differently in different climates, relief and geotectonic order.

Disintegration of primary rocks exposed on the surface of the earth under the influence of air, water and glaciers, temperature changes and other natural-chemical phenomena and organisms is called weathering. It is divided into physical, chemical and biological weathering depending on weathering factors. Physical weathering takes place through the mechanical breakdown of rocks as a result of sudden changes in temperature, water and air currents, movement of ice.

Due to the fact that the thermal expansion properties of the minerals that make up the rocks are different, they expand and contract in different amounts during the sharp daily temperature changes. This leads to the development of initially very small cracks in the rocks. Water seeps into the cracks and freezes.

As a result, the cracks become wider. In rocks with large crystal grains, disintegration of minerals occurs - separation of grains from each other.

Depending on the genetic type, material composition, structural and textural characteristics of the rocks, weathering takes place in different ways. For example, physical weathering on intrusive bodies may result in the formation of large harsangs.

Chemical weathering. The change of unstable minerals under the influence of water, carbon dioxide, oxygen, organic and inorganic acids is called chemical weathering. Chemical weathering takes place in acidic-alkaline and oxidizing-reducing environments.

Chemical weathering includes 5 types of chemical processes: 1) dissolution, 2) hydrolysis, 3) ion exchange, 4) oxidation, and 5) organic reactions.

Biological weathering. Often occurs together with chemical weathering in nature. Atomic migration is the main factor in the transformation of inorganic substances into organic substances and vice versa. 100 mln. years ago, first plants and then animals conquered it. Organisms are found in the upper 6 km of the atmosphere, in the deepest (11022 m) part of the hydrosphere. First of all, the activity of organisms increases the decomposition process. Bacteria, worms, rodents, and plants play an important role in the decomposition of rocks and actively participate in the formation of alluvium, deluvium and soil layers. Tree plants growing on rocky slopes take the leading place in the formation of fractured rocks.

5.Nurash jarayonlari

Cho'kindi hosil bo'lish muhiti ko'p omilli bo'lib, unda hududning iqlimi, reliefi va geotektonik tartiboti muhim ahamiyatga ega. Ulardan har birining o'zgarishi cho'kindi hosil bo'lish jarayoni xususiyatlariga keskin ta'sir etadi. Demak, turli iqlim, relief va geotektonik tartibotda nurash jarayoni turlicha kechadi.

Yer yuzasida ochilib yotgan birlamchi tog' jinslarining havo, suv va muzlik, haroratning o'zgarishi va boshqa tabiiy-kimyoviy hodisalar hamda organizmlar ta'sirida parchalanishiga nurash deyiladi. U nurash omillariga qarab fizik, kimyoviy va biologik nurashga bo'linadi. Fizik nurash haroratning keskin o'zgarishi, suv va havo oqimlari, muzlarning harakati natijasida tog' jinslarining mexanik parchalanishi orqali amalga oshadi.

Tog' jinslarini tashkil etuvchi minerallarning issiqlikdan kengayish xususiyatlari turlicha bo'lganligi tufayli ular haroratning keskin sutkalik o'zgarishida turli miqdorda kengayadi va torayadi. Bu tog' jinslarida dastlab juda mayda darzliklar rivojlanishiga olib keladi. Darzliklarga suv singib, muzlaydi.

Natijada darzliklar yanada kengayadi. Yirik kristall donali jinslarda minerallarning dezintegratsiyasi – donalarning bir-biridan ajralib ketishi sodir bo'ladi.

Tog' jinslarining genetik turi, moddiy tarkibi, struktura-teksturaviy xususiyatlariga bog'liq holda nurash turlicha kechadi. Masalan, intruziv tanalar ustida fizik nurash tufayli yirik harsanglar to'plami hosil bo'lishi mumkin.

Kimyoviy nurash. Suv, karbonat anhidrid, kislorod, organik va anorganik kislotalar a'sirida beqaror minerallarning o'zgarishiga kimyoviy nurash deyiladi. Kimyoviy nurash kislotali-ishqorli va oksidlovchi-tiklovchi muhitlarda amalga oshadi.

Kimyoviy nurash kimyoviy jarayonlarning 5 turini: 1) yerish, 2) gidroliz, 3) ion almashuv, 4) oksidlanish va 5) organik reaksiyalarni o'z ichiga oladi.

Biologik nurash tabiatda ko'pincha kimyoviy nurash bilan birga sodir bo'ladi. Noorganik moddalarning organik moddalarga aylanishida va unga teskari jarayonlarda atom migratsiyasi bosh sababchi hisoblanadi. Quruklikni bundan 100 mln. yil avval dastlab o'simliklar, so'ngra hayvonlar zabt etgan. Organizmlar atmosferaning 6 km tepaligida, gidrosferaning eng chuqur (11022 m) qismida ham uchraydi. Birinchi navbatda organizmlarning faoliyati nurash jarayonini kuchaytiradi. Tog' jinslarining parchalanishida bakteriyalar, chuvalchanglar, kemiruvchilar, o'simliklar muhim ahamitga ega bo'lib, elyuviy, delyuviy va tuproq qatlamining hosil bo'lishida faol qatnashadi. Qoyatoshli yonbag'irlarda o'sadigan daraxt o'simliklar siniq jinslarning vujudga kelishida etakchi o'rinni egallaydi

6.Geological work of wind, water currents, underground water, glaciers, seas and oceans, lakes and swamps.

Geological work of the wind.

Winds, water and glaciers are not limited to moving the products of weathering from one place to another, they mechanically break up rocks and change the topography of the earth's surface. This phenomenon is called the **denudation process** in geodetic science.

Geological activity of the wind. It is considered one of the most powerful atmospheric factors in geological processes, and its geological activity is more in deserts, without trees,

without vegetation, in steppe-desert areas, in geographical areas where the climate changes rapidly. clearly visible.

6. Shamolning, suv oqimlarining, yer osti suvlari, muzliklar, dengiz va okeanlar, ko'l va botqoqlarning geologik ishi.

Shamolning geologik ishi.

Shamol suv va muzliklar nurash mahsulotlarini bir joydai ikkinchi joyga ko'chirish bilan chegaralanmay, ular tog' jinslarini mexanik ravishda parchalaydi va yer yuzasi relyeflarini o'zgartiradi. Bu hodisaga geodogiya fanida **denudatsiya jaroyoni** deyiladi.

Shamolning geologik faoliyati. Shamol geologik jarayonlarda juda katta kuch qudratga ega bo'lgan atmosferada omillardan hisoblanib, uning geologik faoliyatini ko'proq sahrolarda, daraxtsiz, o'simliksiz, dasht- sahro joylarda, iqlim tez o'zgarib turadigan jug'rofik hududlarda ko'zga aniqlik tashlanadi.

Geological work of flowing waters.

The geological work of running water occurs as a result of precipitation caused by the circulation of water on the surface of the earth. Precipitation that falls on the surface of the earth turns into ice and other water and flows from the higher ground towards the lower ground, as a result of which the runoff erodes the surface of the earth and drains them. The formation of flowing waters and the structure of the earth's surface are divided into three categories: temporary flowing waters without a channel, temporary flowing waters with a temporary channel and permanent flowing waters.

The process of erosion mainly consists of temporary and permanent running water carving, eroding and washing away layered and regional rocks on the surface of the earth. The process of erosion is one of the dominant geological processes in regions with a warm and dry climate. If the surface of the earth is sloping, the washing and soaking of falling rainwater will accelerate. Erosion is strong in barren and sparsely vegetated areas.

Oqar suvlarning geologik ishi.

Oqar suvlarning geologik ishi yer yuzidagi suvning aylanma harakatidan vujudga kelgan yogin-sochin natijasida ro'y beradi. Yer yuziga tushgan yog'inlar, muz va boshqa suvga aylanib baland yerlardan pastlikka tomon qarab oqadi, buning natijasida oqar suv yer yuzasini yemiradi va ularni oqizib ketadi. Oqar suvlar paydo bo'lishi va yer yuzasining tuzilishiga kora uchga: vaqtincha o'zansiz oqar suvlar, vaqtincha o'zanli oqar suvlar va doimiy o'zanli oqar suvlarga bo'linadi.

Eroziya jaroyoni asosan vaqtincha va doimiy oqar suvlarning yer yuzasidagi qatlamli va hududli jinslarni o'yib, yemirib, yuvib ketishidan iboratdir. Eroziya jaroyoni illiq va quruq iqlimli tumanlari hukmronlik qiluvchi geologik jarayonlardan hisoblanadi. Yer yuzasi ko'prok qiya bo'lsa, tush ayotgan yomgir suvlarining yuvish, sidirish ishlari tezlashadi. O'simliksiz va o'simlik siyrak o'sadigan yerlarda yeroziya kuchli bo'ladi.

Geological work of the river.

Permanently flowing water on the surface of the earth is called runoff. The speed of flowing water depends on the slope of the terrain and the mass of water. The moving waters in the river bed do not flow exactly parallel, on the contrary, they are always circular, that is, they are directed downward from the surface of the water, from the middle to the edge, they have a great force and the edge of the bed part and the coast are eroded. The work of flowing water is called erosion.

On land, the rivers flow into the oceans and seas and bring 7.6 million tons of products.

Erosion work of rivers:

- a) from the erosion of the bottom of the riverbed in the upstream,
- b) from the flow of fractured rocks in the bed,
- c) from the flow of gravel sands on the banks and riverbeds and finally
- d) consists of collecting small stone fragments downstream.

The river bed mainly consists of 3 types: Uzan alluvium, Khayr alluvium and covered Uzan alluvium. When the water of the river decreases, the bottom of the shallow part opens up. The part of gravel from Uzan alluvium is well-sorted, it reaches a smooth stream in an oval shape, and it is covered with a layer of sand.

Daryoning geologik ishi .

Yer yuzasidagi doimiy oqib turuvchi suvlarga oqar suv deb aytiladi. Oqar suvlarning harakat tezligi relyef qiyaligiga va suv massasiga bog'liq. Daryo o'zanida harakatda bo'lgan suvlar to'g'ri parallel oqmaydi, aksincha doim aylanma, ya'ni suv yuzasidan pastga, o'rtadan chekkaga yo'nalgan bo'lib, katta kuchga ega bo'ladi va o'zani chetki qismi hamda qirg'oq yonini yemiriladi. Oqar suvning bunday ishi yeroziya deyiladi.

Quruqlik yuzasidan daryolar har yili okean va dengizlarga yerigan va qatg'iq holatda 7,6 mln t mahsulotni olib tashlaydi.

Daryolarning eroziya ishi:

- a) yuqori oqimda o'zan tagini yemirishidan,
- b) o'zandagi sinq jinslarni oqizib ketishidan,
- v) daryo qirg'ogidagi va o'zanidagi shag'al qumlarni oqizib ketishidan va nihoyat,
- d) mayda tosh parchalarni quyi oqimda to'plashdan iboratdir.

Daryo yotqiziqdari asosan 3 xil: o'zan allyuviysi, qayir allyuviysi va qoplagan o'zan allyuviysidan iborat bo'ladi. Daryo suvining kamaygan vaqtida sayoz qismining

o‘zani ochilib qoladi. O‘zan allyuviysidan shag‘al qismi yaxshi saralangan bo‘lib, oval shaklida silliq oqim tomon yetadi, uning ustini qum qoplami bilan qoplanadi.

Geological work of underground waters.

Water, which gradually passes between rocks, despite its slow motion, performs a certain and quite significant geological work; the chemical work of underground waters through the solubility property is especially significant.

Yer osti suvlarning geologik ishi. Tog‘ jinslari orasida asta-sekin o‘tib boradigan suv sust harakatl anishiga qaramay, ma‘lum darajada va ancha sezilarli geologik ish bajaradi; yer osti suvlarining yorituvchanlik hossasi orqali bo‘ladigan kimyoviy ishi ayniqsa sezilarlidir.

Geological work of seas and oceans, glaciers, lakes, swamps.

It is known that oceans and seas hold 1370 million km³ of water on 361 million km², i.e. 70.8% of the earth's surface. Therefore, the seas and oceans are a basin that collects gravel, sand, clay, lime, chemical solutions and organic residues brought from the land. Later, these deposits sink into the sea and ocean, where they undergo hydrogeochemical processes and new rocks are formed, which differ from the land deposits by their softness.

Below we will focus on the factors related to the geological work of the oceans and seas. These factors are:

1. Relief and physical mechanical properties of the ocean and the sea.
2. Mechanical and chemical deposits of the ocean and sea.
3. Organic deposits of the ocean and sea.
4. Minerals in the ocean and sea.

Dengiz va ummonlarning, muzlik, ko‘llar, botqoqliklarning geologik ishi.

Ma‘lumki okean va dengizlar yer yuzasining 361 mln km² ya‘ni 70,8% maydoning egalab o‘zida 1370 mln km³ suvni saqlaydi. Demak dengiz va okeanlar quruqlikdan keltirilgan shag‘al, qum, gil, ohak, kimyoviy yeritma va organik qoldiqlar to‘playdigan xavza hisoblanadi. Keyinchalik bu yotqiziqlar dengiz va okean tog‘ga cho‘kib u yerda tuli gidrogeokimyoviy jarayonlarga uchrab quruqlikdagi yotqizilardan yumshoqligi bilan farq, qiluvchi yangi jinslar hosil bo‘ladi.

Quyida okean va dengizlarning giologik ishga bog‘liq bo‘lgan omillar ustida to‘xtalib o‘tamiz. Bu omillar quyidagilar hisoblanadi:

1. Okean va dengiz gubiyaning relyefi va fizik mexanik hossasi.
2. Okean va dengizning mexanik va kimyoviy yotqiziqlari.
3. Okean va dengizning organik yotqiziqlari.
4. Okean va dengizdagi foydali qazilmalar.

Lakes: Water bodies filled with water deep in the land and not directly connected to the sea are called lakes. The science dealing with the study of lakes is called memnology. The total area of the world's lakes is 1.8% of the earth's land or 2.7 million square kilometers. The water volume of all lakes is equal to 29,000 km³.

The main types of lakes are as follows

1. Tectonic lakes are formed as a result of tectonic movements in the sunken, bent and cracked areas of the earth's crust.
- 2 Volcanic lakes are formed by the accumulation of water in the craters of extinct volcanoes or in the lower parts of solidified lava flows.
3. Glacial lakes are mainly formed as a result of erosion or accumulation in territories covered by continental glaciers.
4. Karst lakes are formed by accumulation of water in depressions formed in the karst region.
5. Thermokast lakes are characteristic for permanently frozen lands. They were created by the subsidence of the soil and accumulation of water as a result of the melting of ice buried in the earth's crust.
6. Suffusion lakes are formed by the subsidence of the upper layer as a result of the washing away of the ground water by soluble and easily washed rocks in the earth's crust. Such lakes are more common in the south of Western Siberia and in the north of Kazakhstan.
7. Lakes formed as a result of water erosion and water accumulation are scattered in river valleys and on the sea shores.
8. The dam lakes were created as a result of the mountain collapsing and blocking the river valley.
9. Aeolian lakes are formed when soft rocks are eroded and blown away by the wind, and water accumulates.
10. Flowing and non-flowing lakes Flowing lakes are deeper than non-flowing lakes. Their water is salty.

Ko'llar: Quruqlikdagi chuqurlikdagi suv bilan to'ldirgan, dengiz bilan bevosita aloqador bo'lmagan suv xavzalari ko'l deb ataladi. Ko'llarni o'rganish bilan shug'llanadigan fan memnologiya deyiladi. Dunyodagi ko'llarning umumiy maydoni yer sharidagi quruqlikning 1,8% ini yoki 2,7 mln km kvadrati tashkil etadi. Barcha ko'llarning ya'ni suv xajmi 29000 km³ga, teng.

Ko'llarning asosiy tiplari quyidagilar

1. Tektonik ko'llar-tektonik harakatlar natijasida yer po'stining cho'kkan, bukilgan hamda yorilgan joylarida vujudga keladi.
- 2 Vulqon ko'llari so'ngan vulqonlarning kratyerlarida yoki qotgan lava oqimlarining pastkam qismlarida suv to'planishidan paydo bo'lgan.
3. Muzlik ko'llari asosan matyerik muzliklari bosgan tyerritorialarda sodir bo'lgan yeroziyasi yoki akkumulyatsiyasi natijasida paydo bo'ladi.
4. Karst ko'llari karst hududda vujudga kelgan chuqurliklarga suv to'planishidan hosil bo'ladi.
5. Doimiy muzlab yotgan yerlar uchun tyermokast ko'llar harakterlidir. Ular yer po'stidagi ko'milgan muzlarning yerib ketishi natijasida tuproq cho'kib, suv to'planishidan vujudga kelgan.
6. Suffozion ko'llar yer po'stidagi yeruvchan va oson yuviluvchan jinslarning yer osti suvlarni yuvib ketishi natijasida ustki qatlamning cho'kishidan hosil bo'ladi. Bunday ko'llar g'arbiy Sibirning janubida va Qozog'istonning shimolida ko'proq uchraydi.
7. Daryo vodiylarida va dengiz bo'ylarida suv yeroziyasi va suv akkumulyatsiyasi natijasida vujudga kelgan ko'llar tarqalgan.

- 8, To'g'on ko'llar tog' qulab daryo vodiysini to'sib qo'yishi natijasida vujudga kelgan.
- 9, Eol ko'llari shamol yumshoq jinslarini to'zitib, uchirib ketishdan, suv to'planishdan hosil bo'ladi.
- 10, Oqar va oqmas ko'llar suv oqib chiqadigan ko'llar oqmas ko'llarga nisbatan chuqurroq bo'ladi. Ularning suvi sho'r.

Swamps. The parts of the Earth's surface that are strongly moistened with fresh or salt water are called wetlands. Swamp white water can cover the surface of the soil or be soaked in soil white.

Marshes change like lakes. In addition to peat, bog ore, sulfur colchud, viviant and others are found in swamps. But this mineral is very rare in peat swamps.

Geographic distribution of swamp whites. Wetlands are found in all geographical latitudes, but the most common areas are the forest zone and tundra zone of the average zone.

Botqoqliklar. Yer yuzining chuchuk yoki sh o'r suv bil an kuchli namlangan qisml ari b otq oqliklar d eb aytiladi. Botq oqlik suvi tuproq yuzini qoplashi yoki tupr oqqa shimilgan hold a bo'lishi mumkin.

Botqoqliklar ham ko'llarga o'xshab o'zgarib turadi. Botqoqliklardan torfdan tashqari botqoq rudasi, oltingugurt kolchudoni, viviant va boshqal ar uchraydi. Lekin bu qazilmal ar torfli botqoqlarda juda kam bo'l adi.

Botq oqliklarning geografik tarqalishi. Botqoqliklar hamma geografik kengliklarda uchraydi, lekin eng ko'p tarqalgan yerlari o'rtacha xududning o'rmon xududi va Tundra xududidir.



GLOSSARY (ГЛОССАРИЙ)

Atamaning nomlanishi			Atamaning ma'nosi
O'zbek tilida	Ingliz tilida	Rus tilida	
Endogen jarayonlar	Endogenous processes	Эндогенные процессы	Endogen jarayonlar (grekcha so'z bo'lib, endo-ichkari qismda «genos» paydo bo'lish, tug'ilish demakdir).
Ekzogen jarayonlar	Exogenous processes	Экзогенные процессы	Ekzogen (yunoncha - exo - tashqi, depon - kelib chiqish, paydo bo'lish) jarayonlar
Shamolning geologik ishi	Geological work of the wind	Геологическая работа ветра	Bu hodisaga geodogiya fanida denudatsiya jaroyoni deyiladi.
Oqar suvlarning geologik ishi.	Geological work of flowing waters	Геологические работы проточных вод	Oqar suvlarning geologik ishi yer yuzidagi suvning aylanma harakatidan vujudga kelgan yogin-sochin natijasida ro'y byeradi
Ko'llar	Lakes	Озера	Quruqlikdagi chuqurlikdagi suv bilan to'ldirgan, dengiz bilan bevosita aloqador bo'lmagan suv xavzalari ko'l deb ataladi
Botqoqliklar	Swamps	Болота	Yer yuzining chuchuk yoki sh o'r suv bil an kuchli namlangan qisml ari b otq oqliklar d eb aytiladi
Kimyoviy nurash	Chemical weathering	Химическое выветривание	. Suv, karbonat angidrid, kislorod, organik va anorganik kislotalar a'sirida beqaror minerallarning o'zgarishiga kimyoviy nurash deyiladi
Biologik nurash	Biological weathering	Биологическое выветривание	Kimyoviy nurash bilan birgalikda, trik organizmlar ta'sirida yuzaga keladi

Foydalanilgan adabiyotlar

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