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DISTRIBUTION OF EXOGENOUS GEOLOGICAL PROCESSES IN HIGH- MOUNTAIN LANDSCAPES OF THE CHECHEN REPUBLIC

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Abstract

The paper gives a general description of the highland landscapes of the Chechen Republic: relief, geomorphological position, altitudinal zoning and landscape features of various parts of the highlands. The peculiarities of the distribution of different types of exogenous geological processes in the high mountain landscapes of the Chechen Republic are considered. Various factors of occurrence of exogenous geological processes are given. The natural conditions of highland landscapes of the Chechen Republic are considered.

Keywords: avalanches, mudslides, landslides, topography, landscapes, peaks, riverbeds.

Mountain landscapes, because of their extremely high values of relief energy, the discreteness of the soil cover and the diversity of rocks, high rates of tectonic movements, a sharp change in the hydroclimatic conditions on the overall background of the minimal role of the anthropogenic factor have fundamentally different conditions for the formation of exodinamic processes in comparison with flat landscapes. The diversity of the complex combination of denudation factors causes the manifestation of a different spectrum of exogenous processes in the high-altitude landscape zones of mountainous countries. The widespread type of exogenous processes in highland landscape is solifluction. In avalanche and mid-mountain landscapes, avalanche formation, landslides and avalanche-scree processes predominate, contributing to the formation of destructive mudflows.

Highlands occupy the southern, highest part of the Chechen Republic, they are formed by links of the Lateral ridge and intermountain depressions located between them. The general strike of the highlands of the Chechen Republic is from the west-north-west to the east-south-east [4].

The territory is represented by a series of mountain ridges of latitudinal erosion. To the south and parallel to the Pasture narrow strip stretches the Rocky ridge. West of the river. Chanty-Argun it carries the local name of Chan, and east of Zumsoi-Lam. To the east of the river. The Sharo-Argun continuation of the Rocky Range is, apparently, the Hindu-Lam ridge. Chan's ridge is not high (up to 1625 m). Many Zum-soy-Lama peaks exceed 2000 m and therefore should be ranked as high-mountainous (the highest point of Dai-Hoch is 2855 m). However, a significant part of this ridge is in the high-altitude highlands. The entire length of the Rocky Range is clearly traced in the relief in the form of a narrow (2-3 km) crest with steep southern and sloping-sloping northern slopes. The Cuesta is famous for its Upper Jurassic limestones, dolomites, and places of hyps. Characteristic forms of relief are limestone, columnar (tower-like) and jagged peaks, caves, as well as karst funnels on the northern slope. In addition to the pasture and rocky ridges, the zone can include the territory of intermontane basins and river valleys with framing slopes of ridges both within the North-Jurassic depression (Itum-Kalinskaya, Ushkaloykaya, Bechik, Melkhn, Sharoi basins). The basins and terraces of river valleys are made of washable sandy-argillaceous-shale strata.

The lateral ridge to the east of Tebulos-Mt (or Dakokh-Kort, 4493 m), the highest peak in Chechnya, but also in the entire eastern Caucasus, to the city of Diklos-Mt (or Dzana-Kort, 4285 m), is known as the Piriquiters. From the last peak to the east, the link of the Bokova ridge is Snegovoi. Northern branches of the Lateral ridge in the basin of the river. Chanty-Argun are Pogolam (the highest point of Maistis-Mtah, 4,072 m) and Tebulos (the unnamed peak, 4055 m), forming the gorge of the river. Maystychi. East of the Tebulos northern spur of the Piriquitas ridge is Hildehara-Duk (town of Nargig-Court, 3,767 m), and in the basin of the river. Sharo-Argun mountain ridges, leading from the Komito-Datakh-Kort (4261 m) and Donos-Mta (or Kharha-Lam, 4174 m) with peaks rising to a height of 3600-3800 m. The highest northern branch The snow ridge is Susul-Court (2743 m).

In the interfluvium of Chanty- and Sharo-Argun there are high mountain ranges: Kobulam (Khazenty, or Arsmag-Court, 3886 m), gradually decreasing to the northeast; Khachira-Duk, Chanty-Duk (with the tops of Ghai-Kort, Rogh-Kort and Durzmi-Kort), perpendicularly branching to the north-west from Kobulam. The highest points of the mountain ranges of the interfluvium are about 2500 m high.

On the left bank of Chanty-Argun, stretches the range of Vegilam, closing in the basin of the left-sided sources of the river. Meshekhi with the ridge of the Kurelam (its peaks have a height of up to 3100 m). In parallel and east of the latter is the Basta-Lam mountain range with elevations of up to 3200 m. Further to the east, the height of the watershed ranges forming the gorges of the left tributaries of Chanty-Argun is markedly reduced. Thus, the Terloi-Duk ridge does not reach 2140 m (Burchol-Kort), Gezakho-Duk - 2130 m (Gezlam). Only the Dugon-Kort massif is about 2240 m high [1,3].

The most common exogenous processes in the described landscapes of high mountains, as noted above, are mudflow processes, landslides, screes, the manifestation of karst and avalanches.

The formation of mudflows in alpine landscapes is caused by a combination of geological, climatic and geomorphological conditions: the presence of mud-forming soils, sources of intensive watering of these soils, and geological forms that promote the formation of steep slopes and streams. In the majority, mud-stone flows are formed. Feeding mudflows - rain. In the zone of the Main Range, feeding is possible by the melting of glaciers and ice blocks.

In the framework of the Rocky Range, mainly nasal mudflows of rain genesis are formed. The appearance of mudflows in landscapes can also be associated with intensive snowmelt. In some areas, the formation of mudflows is hampered by the strong drainage of the territory due to the liming of the limestones, and the affinity of the slopes.

Precipitation in the high-mountainous landscapes is characterized by great unevenness in the seasons, due primarily to the invasion of the moist air masses that the Atlantic cyclone brings. The western air masses prevail and in this region the western slopes receive much more moisture than the eastern slopes. Steady snow cover lasts until the end of May, a steady snow cover above 3,800 meters is maintained throughout the year.

The most dangerous for avalanches are slopes of 25-35 °, they account for more than 50% of all avalanche foci, 40% of avalanches are observed on slopes of 35-46 °. Thus, on slopes with a steepness of 25-46 degrees, 90% of the avalanches are formed in the basin. Slopes of 15-25 degrees and 44-75 degrees are less avalanche active, they account for only 10 percent of avalanche foci [1,2].

Among the exogenous processes in the landscapes under consideration are also landslide processes, but less often than mudflows. The high dispersity of the clayey rocks of the region, their hydromica composition and physicochemical features cause the fact that under the influence of various natural and artificial factors the structure, state, and at the same time, the deformation characteristics of rocks easily change in an unfavorable direction.

The forces of internal friction and cohesion of rocks are no longer sufficient to maintain a stable position on the slope. From this it follows that the above-mentioned peculiarities of the composition, condition and properties of the rocks of the region are one of the most important factors causing the development of landslides.

In the basin of the river. Argun within the North-Jurassic depression, which is almost not distinguished in the relief, landslide processes are widely developed, but the territory is poorly developed and landslides are not directly threatened by objects and communications. However, they actively supply loose material for debris flows and beds. Characteristic is that the displacement of large landslide blocks occurs with rotation. Therefore, on the stepped slope there are many landslides and hollows that have been thrown back. Some of the basins being filled with water turned into lakes of landslide genesis. The slope of landslides of all landslides in this region are riverbeds and streams. Everywhere there is a creeping of plastic landslide masses to the floodplain, where they are washed out during the period of floods and carried away by water. Therefore, in the waters of the Argun River there is a large amount of solid, predominantly suspended material [5].

Low-watered landslide processes left narrow watershed areas between large beam and river systems, as well as some areas of high terraces, built up by pebbles. In view of the fact that a number of factors of a regional nature (neotectonic uplifts, erosion, seismicity) continue to intensively influence the relief-forming processes at the present time, in the natural conditions stabilization of landslides is not observed.

All types of rocks widespread in the region are affected by landslide deformations: clays of the Chokrak, Karagan and Sarmatian stages and Quaternary sediments. Most landslides develop with the capture of bedrock. The thickness of the rocks captured by the displacements ranges from 1.0-2.0 m in small landslides-debris flows, up to 30-40 m in large structural and contact landslides.

Highland conditions are characterized by the development of landslides, the formation and development of which is caused mainly by regional factors, such as clayey rock composition, physicochemical and deformation features of rocks, which cause their ability to rapidly decompose and soften, neotectonic movements, bottom and side erosion, seismicity and hydrometeorological factors.

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