Elmurzaev R.S.

THE SPREAD OF AVALANCHE IN THE MOUNTAINOUS PART OF THE CHECHEN REPUBLIC

Elmurzaev R.S., Russian Federation, Chechen State University, Lecturer

Abstract

The article describes in detail the types of relief and high-altitude zones of the mountainous part of the Chechen Republic. The analysis of interrelation between relief and high-altitude zones and the formation of avalanches in the mountainous part of the Chechen Republic is given. Characteristics of avalanche activity and some exogenous geological processes associated with the features of the relief in various parts of the mountainous Chechnya are given.

Keywords: relief, avalanche, zone, conditions, snowfall, activity, ridge.

Snow avalanches are one of the natural phenomena generated by climatic and geomorphological causes, which are dangerous for the population and the economy. Avalanche is a snowfall in the steeply sloping mountains with abundant snow cover. Snow mass, moving at a high speed (20-30 m / s) down the mountainside. Avalanche, periodically flowing along the same paths - gutters, logs, erosive furrows, called troughs. Sliding landslides on the entire surface of the slope bring especially big woes. The causes of avalanches - the violation of the stability of snow due to heavy snowfalls, rain, snow melting, recrystallization of snow with the formation of deep frost - loose, loose snow in the lower part of the layer, along which, as on bearings, the avalanche is overthrown.

The parts of the slopes from which avalanches come down are called avalanches. Most avalanches are different depressions, in which snow accumulates more than on convex slopes. The height of the upper edge of large avalanches above the bottom of the valleys is measured by many hundreds of

meters, their area - tens of hectares. Geomorphologic classification of avalanches includes erosion cuts, denudation funnels, flat-bottomed carvings or deformed erosion. Avalanches with avalanches of these types have a common feature: the avalanche paths in them pass through distinct channels-trays. Therefore, such centers are united by the name of trough ones. To this group are added flat (undivided) avalanche slopes. The navigators of different types have different area and the angle of inclination of the surface. Depending on the geological conditions, the roughness of their surface varies. With an increase in the angle of inclination, their frequency increases, and the volumes decrease [1].

The mountainous part of the Chechen Republic is located on the northern slope of the Greater Caucasus. The southern mountainous part of the Chechen Republic is a system of four parallel-extending mountain ranges crossed in many places by deep gorges of mountain rivers. The northernmost of these ridges is the Wooded Range (Black Mountains). Its height does not exceed 1000-1200 m above sea level. Landslides and gullies are widespread in the eastern part of the Wooded Ridge, the formation of which is associated with deforestation on mountain slopes or with their plowing.

Next lying south of the Pasture Range consists of a whole system of ridges of the second order. In the western part, it forms two, and in places even three parallel ridges. Many peaks of the Pasture Ridge rise to a height of over 2000 m.

Next comes the Rocky Ridge, individual peaks of which rise to 3000 m above the ocean level. The northern slopes of the Pasture and Rocky ranges are long and gently sloping. The southern slopes, on the contrary, break off steep ledges. In some places they form quite steep cliffs of several tens and even hundreds of meters, forming a kind of relief - the cuest.

Highlands occupy the south-western, the 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 high mountains of the Eastern Caucasus is from the west-north-west to the east-south-east. Within the boundaries of Chechnya, the basins of the upper reaches of the Argun and Gekhi rivers are confined to the highlands.

The landscape diversity of the highlands is associated with complex paleogeography, mountain-forming processes, glaciation, interaction with flora and fauna of many biogeographical regions, fluctuations and climate changes that have resulted in a great variety of geological-geomorphological conditions, relief character, local air mass circulation formation, including seasonal variability climatic conditions [4,5].

The highest part - the Lateral Ridge, is a chain of the highest mountain ranges. In the massif of the Mahis-Magali (3,989 m.) The lateral range acquires

the features of a separate ridge bounded from the north by the longitudinal valley of the Guloy-Khi River, and from the south by the longitudinal valleys of the tributaries of Assy and Chanty-Argun. Further, to the east, the links of the Lateral ridge on the territory of Chechnya are the Pirikitelsky Range with the tops of Tebulos-Mt (4494 m), Komito-Data-Kort (4271 m.), Donos-Mta (4178 m) and Snegova ridge, the highest point which is the mountain Diklos-Mt (4274 m).

In the mountainous part of the Chechen Republic, slopes of 25-35 ° are the most avalanche-hazardous, they account for more than 50% of all avalanche foci, 40% of avalanches are observed on slopes 35-460. Thus, on slopes with a steepness of 25-46 degrees, 90% of the avalanches are formed in the basin. Slopes with a steepness of 15-25 degrees and 44-75 degrees are less avalanche active, they account for 10 percent of avalanche foci.

In avalanche areas, a considerable development was given to mudflow and landslide processes. Their development is facilitated by hemorrhological features: a straight erosion-tectonic relief with a clear morphological reflection of structural elements in it, disturbed Neogene's new folding, the terrain of a relatively young one, actively formed in the confrontation of intense modern uplifts and progressive erosion, with increased precipitation from 800 to 1000 and more mm. in year. Displacement of landslide masses occurs along the slip plane formed in a weakened zone of probably tectonic origin. Landslips of the upper tiers refer to the structural and partly cutting types.

The area with a strong avalanche activity covers the highland part of the Lateral ridge, a stretch of 45 km. in the east (Dixlomta, 4285 m) and the upper reaches of the river. Sharo-Argun. During the winter period, avalanches of fresh snow fall, which is associated with heavy snowfalls and snowstorms, which gives on the slopes an increase in the height of the snow cover up to 50 cm and more. The number of days in a year with a snowstorm can reach 45. The avalanche formation is significantly affected by hair dryers and heaters: they contribute to the formation of avalanches from wet snow. The number of days with hairdryers at an altitude of 2,923 m can reach 100. The avalanche period in the region lasts for 6.5 months and ends in May [6].

The descent of avalanches in this region, especially sporadic ones, causes great damage to forestry and creates a great danger in the construction of roads and other objects.

The area with a moderate avalanche activity covers a high altitude belt of 1500-2500 m. Here, more than 16% of avalanches can give 1 avalanche per year, 6% for 1 avalanche in 2-3 years, 50% for 1 avalanche in 3-10 years and 28% - are sporadic avalanches. The upper boundary of the district passes along the northern slopes of the Lateral Range and its spurs at an altitude of 2500 m.

The lower boundary lies at 1500-1700 m and can be traced along the northern and southern slopes of the Rocky Range. The number of days in a year with a stable snow cover is 112, and at an altitude of 2500 m can reach 180. The snow cover appears in early December, coming off in early March. The avalanche period begins in the second half of December and lasts about 3 months. The great danger is represented by sporadic avalanches, which are formed once in 3-10 years during strong and prolonged snowfalls. Up to 85% of the avalanches are wet. The upper limit of the area is the most avalanche risk. Avoiding avalanches here is a significant danger for vehicles and tourists, causing blockages of roads and hiking trails.

The area with a weak avalanche activity is located lower than the previous one, at altitudes of 1000-1500 m, and can be traced in the form of individual sections on the slopes of the Pasture and Rocky ridges. The first section of this area stretches for 40 km. from the western borders of the republic to the southeast along the slopes of the Pasture ridge, covering the central part of the Rocky Range. The second section of the narrow 4-kilometer strip stretches for 80 km. along the northern slopes of the eastern extremity of the Rocky and Pasture ridges.

In a region with a weak avalanche activity in the cold period of the year (November-February), a relatively small amount of precipitation (74 mm) falls, which causes a lowly pronounced avalanche activity of the slopes. Therefore, 80% of the avalanche foci in the state ¬ form only 1 avalanche in 5-10 years and only 5% of the foci give one avalanche per year. The remaining 15% of the foci are able to give only sporadic avalanches. The number of avalanche days in the year is about 70.

The area with insignificant avalanche activity is confined to low mountains and is located in the high-altitude belt 600-1000 m. The lower boundary of this region can be traced along the northern slopes of the Pasture ridge in the west to the borders of the Chechen Republic in the east. The region is characterized by a short duration of snow cover (50-60 days a year). A stable snow cover appears at the end of November, reaching a maximum thickness (10-15 cm) in January-February and coming off at the end of March [4].

According to the conditions of relief and snow in this area avalanches are practically absent. However, in the snowy winters on the slopes of slopes deprived of vegetation, it is possible to collect wet avalanches and voles up to 500 m3. The presence of dense forests and bushes sharply reduces the process of avalanche. The forest contributes to a uniform distribution of the snow cover on the slopes and weakens the meteor migration of snow.

The area with a potential avalanche hazard is located in the high-altitude belt 400-800 m and a narrow 7-kilometer strip stretched from west to

east along the northern and southern slopes of the Lesisto Ridge, covering the spurs adjacent to it.

The slopes of the Wooded ridge have soft rounded outlines, typical of low mountains. This area is now avalanche-safe, but certain sections of the slopes can become avalanche-like when cutting forests, excavating soil or cleaning slopes from vegetation, and other works that reduce the roughness of the slopes.

The consequences of neglect of nature are not immediately apparent. Only when it is discovered that the ecological situation is approaching the catastrophic, the society begins to sound the alarm. Objects of tourism of winter sports in some areas may be subject to avalanche [2,3].

In the considered high-mountainous part, mudflow processes, rockfalls, talus, less landslide processes are more often developed, the development of which is promoted by hemorrhological features: a straight erosion-tectonic relief with a clear morphological reflection of structural elements in it, disturbed Neogene's new folding, the terrain of a relatively young, formed in the confrontation of intense modern uplifts and progressive erosion, with increased precipitation from 800 to 1000 and bol its mm. per year [7].

Humidification of rocks increases their mass and accordingly the action of gravitational forces on them, which is accompanied by a weakening of the strength of structural bonds in them, a change in the consistency of soils to plastic and even fluid. This all leads to a decrease in the strength (friction and adhesion) of rocks on the slope. With the rainfall nature of precipitation, only a small part of the moisture is infiltrated, and most of it quickly flows down the slope.

References:

[1] Gakayev R.A. Anthropogenic landslide formation in residential landscapes of the Shatoi Basin. In the collection: Sergeevskie readings. Engineering-geological and geoecological problems of urban agglomerations. Materials of the annual session of the Scientific Council of the Russian Academy of Sciences on the problems of geoecology, engineering geology and hydrogeology. Moscow, 2015. P. 230-234.

[2] Gakayev R.A. High mountain landscapes of the Chechen Republic and patterns of their distribution // Young scientist. 2015. No. 15 (95). Pp. 327-330.

[3] State report on the state of the environment of the Chechen Republic in 2010. Committee of Ecology under the Government of the Chechen Republic, Grozny 2011.
[4] Assessment of the natural potential and ecological state of the territory of the Chechen Republic. Ed. acad. M.C. Zalikhanov. St.P. Gidrometeoizdat, 2001.
[5] Razumov V.V., Glushko A.Ya., Shagin S.I. Geography of natural disasters in the territory of the Southern Federal District of Russia. Problems of regional ecology. 2009. № 5. P. 224-228.
[6] Rashidov M.U., Gakaev R.A. To the issue of the relationship between society and nature in the Chechen Republic. Issues of modern science and practice. University of. in and. Vernadsky. 2007. № 3 (9). Pp. 146-149.
[7] Gakayev R.A., Ubaeva R.A. Landslide hazard in the mountainous part of the Chechen Republic. Prospects of science. 2012. No. 6 (33). P. 199-201.