N E W S
OF THE NATIONAL ACADEMY OF SCIENCES OF THE REPUBLIC OF KAZAKHSTAN
SERIES OF GEOLOGY AND TECHNICAL SCIENCES
ISSN 2224-5278
Volume 6, Number 426 (2017), 107 – 114

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BIG SESMIC RACKFALLS AND LANDSLIDES IN THE MOUNTAINE REGIONS OF SHOUT-EASTERN KAZAKHSTAN

Abstract. In the mountainous regions of South-Eastern Kazakhstan, 64 large modern and ancient seismogenic rockfalls and landslides were identified. There are 27 gravity seismic dislocations in the Zhetysu Alatau ridge, 19 in Ile Alatau, 14 in Kungey Alatau and 4 in Teriskey Alatau. There are 26 dammed lakes. Of the total number of seismic dislocations 4 have a volume of more than 100, 27 - from 10 to 100 and 37 - from 1 to 10 million m^3. The largest seismogenic rockfall is the rockfall of the Big Almaty Lake in the Ile Alatau. Its volume is 380 million m^3, the length of the route is 5.5 km, the height of the fall is 1300 m. The thickness of depositions reaches of 200 m. The area of disturbed lands is 3.8 km^2.

The zoning of the mountainous territory of South-Eastern Kazakhstan on the repeatability of seismic shocks with an intensity of more than 8 points on the MSK-64 scale was made using data on strong earthquakes with M more than 5 for the period from 1887 to 2015. Strong seismic shocks caused rockfalls and landslides repeated 3-4 times during this period In the central parts of the ranges Ile Alatau and Kungei Alatau. It is in these areas that the greatest density and the largest volumes of seismic dislocations are noted.

In the central and eastern parts of Zhetysu Alatau during the last 130 years there were no strong seismic shocks. However, in these regions, a high density of paleoseismodislocations is noted, among which 12 have volumes from 10 to 100 million m^3. This allows us to attribute these territories to territories with high frequency of strong earthquakes.

Keywords: earthquakes, landslides, rockfalls, seismic dislocations, zoning.

УДК 624.131.543:550.34(274.4)

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КРУПНЫЕ СЕЙСМОГЕННЫЕ ОБВАЛЫ И ОПОЛЗНИ В ГОРНЫХ РАЙОНАХ ЮГО-ВОСТОЧНОГО КАЗАХСТАНА

Аннотация. В горных районах Юго-Восточного Казахстана выявлено 64 крупных современных и древних сейсмогенных оползней и обвалов. В хребте Жетысу Алатау насчитывается 27 гравитационных сейсмодислокаций, в Иле Алатау – 19, в Кунгей Алатау – 14 и в Терискей Алатау – 4. У 26 обвалов имеются завальные озера. Из общего количества сейсмодислокаций 4 имеют объем более 100, 27 – от 10 до 100 и 37 – от 1 до 10 млн. $м^3$. Самым крупным сейсмогенным обвалом является обвал Большого Алматинского озера в Иле Алатау. Его объем 380 млн. $м^3$, длина пути – 5,5 км, высота падения – 1300 м. Толщина завала достигает 200 м. Площадь нарушенных земель – 3,8 $км^2$.