

# SEISMIC RECORDS OF LANDSLIDES FROM TIEN-SHAN REGION

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**Sokolova I.N. (1), Berezina A.V. (2), Pershina E.V. (2), Sokolova N.P. (2)**

(1) Branch “Institute of Geophysical Research” RSE NNC RK, Kurchatov, Kazakhstan

(2) Institute of Seismology NAS KR, Bishkek, Kyrgyzstan

e-mail: sokolova.inessa@mail.ru

Sometimes seismic stations of Kazakhstan and Kyrgyzstan record unusual events related to exogenous geological processes, for example, landslides, snow avalanches, rock falls, and mud flows. The landslides can be caused by tectonic processes, by geological, geomorphological and hydrogeological conditions, and by effect of a set of anthropogenic factors.

Every year in Kyrgyzstan and Kazakhstan there are hundreds of landslides; most of them are of small volume; however, in recent time, the cases of large, catastrophic landslides with volume more than million cubic meters became frequent. The records of Kyrgyzstan seismic networks allowed for investigation of peculiarities of the wave pattern of large landslides. On December 1, 2019 the landslide occurred at the region of Kumtor gold ore field, its volume was 12 mln 825 thous. cubic meters, and on September 14, 2020 at the region of Kara-Keche coal deposit in Naryn region, its volume was 800-900 thousand cubic meters. The landslides records were compared with the ones occurred at the region of Zayiliyskiy Alatau in spring 2004 and recorded by Kazakhstan stations, and a large landslide occurred in the National natural park “Kolsay lakes” on April 18, 2018 (45-50 million cubic meters). The dynamic and kinematic parameters of records of unusual seismic events were studied. The probable factors that caused the landslides were investigated. It is shown that the landslides at Kara-Keche and Kumtor deposit regions were caused by anthropogenic activity.