

## The pulsing glaciers of Vanj Valley (Pamir)

Abdulkhak R. Faiziev<sup>1</sup>, Firuz A. Malakhov<sup>2</sup>, Nosir S. Safaraliev<sup>2</sup>

<sup>1</sup> Institute of geology, earthquake engineering and seismology of the Academy of sciences of the Republic of Tajikistan, 263 Ayni street, Dushanbe, 734063, Tajikistan, faiziev38@mail.ru

<sup>2</sup> Tajik National University, 17 Rudaki av., Dushanbe, 734025, Tajikistan

Tajikistan is a mountainous country; 93 % of its territory is occupied by mountain ranges of the Tien Shan and Pamir. The absolute height of the earth's surface ranges from 300 to 7995 m above sea level, with nearly half of its territory located at an altitude of over 3000 m. About 6 % of Tajikistan's territory is covered by glaciers. There are more than 9139 glaciers with a total area equal to 9000 square km. Among them, glacier Fedchenko is the biggest not only in Tajikistan, but in the mid-latitudes of the Earth. It extends to a distance of 70 km. Around 60 of the total number of glaciers are able to pulsate, i.e. can make many kilometre-size "throws" with devastating consequences. The largest number are in the Gorno-Badakhshan (Kohistani Badakhshan) Autonomous Region. The most famous of them are Khirs (Bear), Byrs, Fortambek, Muzgazi etc. Frequency shifts surging glaciers varied and ranges from 5-6 to 10-12 years or more. Often these glaciers damming (blocking) mountain rivers. Thus formed are unstable dam and at any moment can happen catastrophic release of water from these lakes with all the attendant adverse effects. Among river valleys of Badakhshan the r. Vanj Valley with a population of over 30,000 people is considered the most vulnerable, where houses 33 village and hundreds of hectares of arable land. At the source of the river, one of the major rivers of the Pamirs, among numerous glaciers are several major surging glaciers (Khirs, Abdukagor, Dastirost) that threaten the inhabitants of the valley for many years, with catastrophic consequences. For example, in 1963, 1973 and 1989 the glacier Khirs kept in suspense all the inhabitants of the river valley of Vanj when the glacier blocked the riverbed. As a result, the lake was formed, which could be realized in the form of powerful mudflow, causing enormous economic damage and numerous casualties. In fact, the river broke through its ice dam, destroyed and demolished bridges, embankments, some buildings and acreage of crops in the territory of the former Soviet Union and Afghanistan. There were slight casualties. However, given the global warming must be prepared for greater disaster. In Soviet times, in the seventies of the last century to solve this problem was drafted bypass tunnel for safe landslide in case of a disaster, which has not been realized. Meanwhile, it was found that the glacier Khirs, for the periods between the pulsations in the centre accumulated an average of 270 million tons of ice. Such a mass and can serves as a "signal" of a possible beginning of the next progress. The problem is so great that a solution is possible only on the national and international levels. Currently, the Tajik government alone cannot solve this problem. Natural disasters do not recognize political boundaries and only by joint efforts, using the knowledge and experience of neighbours, other residents of mountainous areas of the world, you can reduce the damage from exposure to these dangerous natural phenomena. Thus, the inhabitants of the river valley Vanj and adjacent areas River Valley Panj as a sword of Damocles hanging dangerous threat of catastrophic natural phenomena.