JOURNAL OF MULTIDISCIPLINARY SCIENCES AND INNOVATIONS
GERMAN INTERNATIONAL JOURNALS COMPANY
ISSN: 2751-4390
IMPACT FACTOR (RESEARCH BIB) : 9,08. Academic research index

GENERAL INFORMATION ON FLOODS AND FLOODS, THEIR DESCRIPTION AND PREVENTIVE MEASURES

Sh.V.Rakhmonov

Associate Professor, Namangan State Technical University

Kh.G'.Nuraliyeva

Student at Namangan State Technical University

Abstract: Due to the geographical location of our country, the probability of occurrence of hydrometeorological emergencies remains very high. In particular, analyses show that the occurrence of mudflows and floods is increasing from year to year. This causes economic losses to the population and its material and spiritual wealth as a result of floods. In turn, this indicates the urgency of preparing the population for appropriate action in emergency situations associated with mudflows and floods.

Keywords: mudflow, flood, danger, risk, floods, river, streams

In our lives, we encounter many natural and man-made hazards and try to minimize the losses caused by them. Learning about safety at home and emergency procedures is the most sensible precautionary measure when living in areas with a high risk of natural disasters. First, we can determine the occurrence of one or another natural disaster in a particular area and then take measures to prevent it or reduce its risk [6].

In today's era of frequent natural disasters, it is extremely important for the population to have knowledge and skills about possible natural disasters, their characteristics, and methods of reducing the losses they can cause [2].

Dangerous natural events cannot be stopped, but timely advance warning of them can reduce the scale of the disaster. The system of monitoring dangerous events helps to reduce the risk of disasters by preparing early warnings and providing information for responding to emergency situations.

Among natural disasters, mudslides and floods are distinguished by the damage they cause to the material wealth of the population and economic objects. First, let's dwell on the causes of mudslides and floods.

A mudslide is a stream of water flowing down a mountain, accompanied by large amounts of rocks, sand, and soil, in rivers and streams. It can occur during regular rainstorms, melting mountain snows, and other situations [8].

Research methodology. In mountainous areas, heavy rainfall, rapid melting of glaciers and snow, and the removal of mountain rocks from the slopes of the mountains by the flow of water to the plains is called a mudslide. Approximately 50-60% of the mudslide mass consists of rock fragments of various sizes, plant and tree fragments. The duration of the mudslide is often from 0.5-2 hours to 12 hours, the speed can be from 5-8 m/s to 12 m/s, and the density of the mudslide mass is 1.2-1.9 t/m3 [4].

The speed of mudflows can be divided into 3 groups:

very fast (movement of more than 100 thousand m3 of mudflow mass, once every 6-10 years);

average (from 10 to 100 thousand m3, once every 2-3 years);

weak (less than 10 thousand m3) [5].

A stream with such physical parameters is very powerful, causing significant damage to economic sectors, destroying water structures, roads, villages and cities, gardens, bridges, and burying vast areas with layers of mud, sand, and stones.

Mudflow is an Arabic word that means a flood in mountainous areas [3].

Mudflows are divided into three groups depending on the size of the solid particles they carry:

• water-stone mudflows;

• mudflows;

• mixed mudflows [8].

The most powerful mudflows in Central Asia were observed in the valley of the river named after the city of Almaty, Kazakhstan.

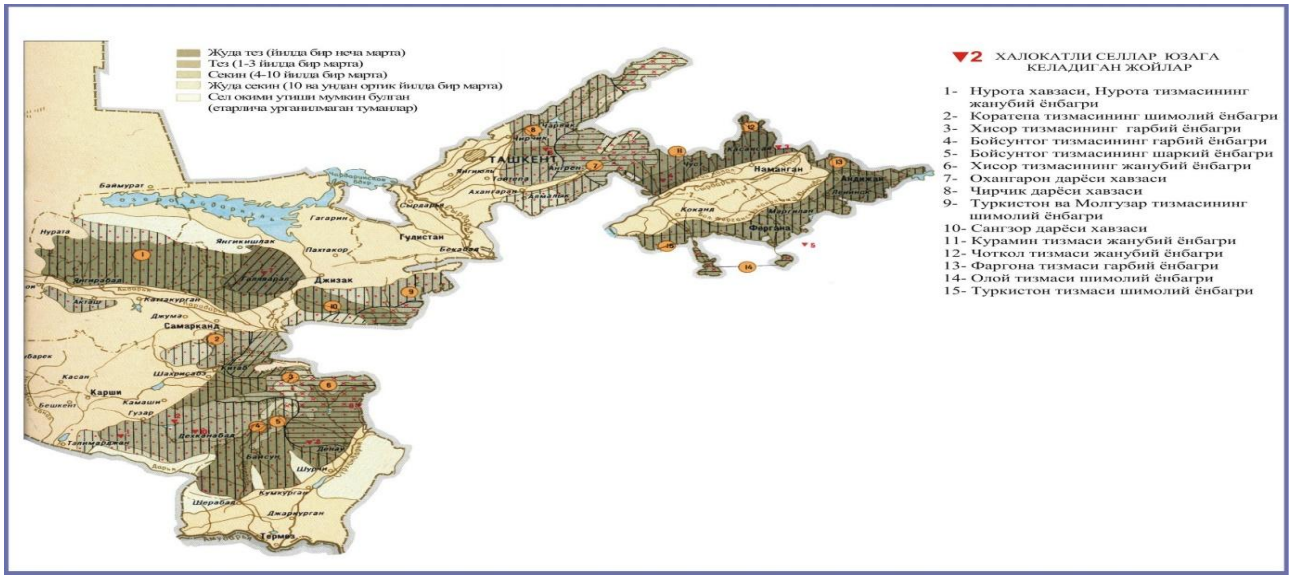

Figure 1. Areas in our country where flood risk may occur

The most powerful mudflows in Central Asia were observed in the valley of the river named after the city of Almaty, Kazakhstan. For example, on the evening of June 8, 1921, a mudflow swept through the city, carrying 100,000 wagons of rock. More than 400 people died as a result of this disaster. The mudflow was caused by the melting of snow and glaciers in mountainous areas and heavy rainfall [4].

The mountainous regions of the Tashkent, Kashkadarya, Surkhandarya, and Fergana regions of the Republic of Uzbekistan are considered to be zones prone to mudflow disasters [3].

Over the past 100 years, more than 2,500 mudflows have been observed in the territory of the Republic of Uzbekistan. Of these, more than 1,400 were mudflows, more than 350 were water-

rock floods, and more than 650 were mixed mudflows [5]. In the Fergana Valley of our republic, in the pre-Tashkent regions, mudflows are often observed. Mudflows occur in the territory of our republic in the spring and the first month of summer. The main factors are the natural conditions of the region where our territory is located, such as strong hail, rains in the spring months, warming temperatures, rapid melting of glaciers and snow in the mountains, the slope of the river basin is 3-50 meters, and the presence of loose mountain rocks in the catchment area, the particles of which are not connected [7].

Result. Floods are also considered the most dangerous natural disasters. Floods are defined as the occurrence of land in certain areas under water as a result of a sharp rise in the water level in rivers, lakes, and reservoirs.

Various factors contribute to flooding:

Causes of flooding. Heavy and continuous rainfall, active melting of snow and glaciers as a result of rising temperatures, large amounts of soil falling into riverbeds, earthquakes, and human activity are all factors that contribute to the occurrence of flooding [5]. (Table 1.2)

Type	Primary reason	Distribution and occurrence
Rainy Hail,	heavy rain	Associated with rock erosion and landslides
Frosty	Sudden melting of snow and ice	Associated with the release of meltwater from glaciers in high mountain areas
Seismogen	Strong earthquakes	In highly seismically active areas
Direct human influence	Accumulation of man-made rocks, poorly constructed dams	Washing and shifting of man-made rocks, damage of dams
Indirect human influence	Disruption of soil, vegetation cover	In areas where forests and grasslands meet, erosion of rocks and streams occurs.

Table 1.1. Causes of floods

- As a result of heavy rainfall (hailstorms, mudslides);
- As a result of prolonged melting of snow;
- As a result of strong winds;
- As a result of the accumulation of glaciers in flowing rivers and the formation of artificial dams;
- As a result of the destruction of water storage reservoirs due to erosion, erosion of mountain rocks or other reasons.

As a result of heavy rainfall, the water level rises sharply, rivers and lakes cannot hold water, and

as a result, crops, houses, and roads are flooded and washed away. In addition, electricity, communication transmitters, and land reclamation systems fail, livestock, agricultural crops disappear, and raw materials, fuel, food, mineral fertilizers, and others become unusable or disappear. As a result, huge material damage is caused and people can die.

Floods can be divided into four groups

1. Low-water floods. They occur once every 5-10 years on lowland rivers. When such floods occur, the fields near the banks are flooded. The national economy suffers minor material damage and the life of the population is not disrupted.

2. High-water floods. Such a flood occurs once every 20-25 years, as a result of which a fairly large area of the river valley is flooded. In some cases, people have to be evacuated to safer places. Such a flood causes significant material damage.

3. Notable floods. They occur once every 50-100 years. They cover river basins, disrupt economic activity, and cause serious material damage. The population has to be evacuated.

4. Catastrophic floods. Such a disaster occurs once every 100-200 years. The way of life changes completely. Such floods lead to the death of many people, and special measures have to be taken to protect important economic facilities.
Flood disasters are frequent in various places, including Uzbekistan. For example, in 1991-1995, in many regions of Khorezm, Bukhara, Surkhandarya, Kashkadarya, Jizzakh, Syrdarya and other places, huge areas of crops were flooded, resulting in significant material damage. In particular, 750 thousand hectares of cotton, 28 thousand hectares of melons, 20 thousand hectares of orchards, as well as 21 thousand residential buildings, more than 100 kindergartens and schools, 250 km of roads, 113 bridges and more than 200 km of irrigation facilities were destroyed. In October 2009, heavy rains in the Philippines caused severe flooding, destroying areas, residential and business premises, bridges and roads. As if this were not enough, landslides occurred in the foothills due to the extremely high humidity. This disaster affected 2.5 million people, 30 thousand people were evacuated from dangerous areas to safer areas, and the amount of material damage amounted to several tens of millions of US dollars. Also, in 2009, incessant rain in Istanbul, Turkey, with a population of 15 million, caused a flood of 2 m high, destroying thousands of houses and roads [26].

Strong winds blowing in the opposite direction to the flow of water in rivers can also raise their level, resulting in flooding. Such a flood was observed on the Neva River in St. Petersburg. In November 1997, a very strong wind caused a flood in Vietnam, which submerged large areas of housing and material resources, and killed many people.

Floods also occur when glaciers form on the surface of flowing rivers and these glaciers accumulate and form barriers (dams) against the flow of water. Such a flood was observed in 1992 in three areas along the Amu Darya in the Republic of Karakalpakstan. All measures were taken to prevent this disaster, and eventually the ice dams that were blocking it were destroyed by explosions with the help of military aircraft [18]. As a result of this disaster, much of the land in the Bozatov district was destroyed, and electricity sources and equipment were out of order. The roads leading to the Aspantoy, Porlitov, Kyzyljar, and Aliovul points were cut off due to flooding. During the elimination of the consequences of the disaster, more than 3,200 people and 3,026 head of cattle were evacuated to safe places, and 26 km of roads were provided to Porlitov, Kyzyljar and Aliovul. The material damage from this disaster amounted to one hundred million soums. Floods in such cases are very common in the world [8].

Floods can also be observed as a result of the failure of canals and water reservoirs for various reasons. In general, canals and reservoirs are built for the purpose of using water energy, waterways and water itself. Currently, in the CIS countries, there are about 1,000 reservoirs with a water capacity of more than 1 million m3, and their water level is 116,000 km2. Similarly, 54 water reservoirs have been built in Uzbekistan, 10 of which are located on the border with neighboring republics. For example, Kayrakkum, Rogun (Tajikistan), Tuyamoyin (Turkmenistan), Takhtagul (Kyrgyzstan), Chordarya (Kazakhstan) and others can be cited as examples [7].

More than 55.5 billion m3 of water is stored in the reservoirs of our republic, which mainly provide water for agriculture and achieve great economic benefits. However, if such hydraulic structures are damaged for any reason, the impact of the stored water will cause serious harm to people, livestock, and the environment. Similarly, more than 5 km3 of water is stored in the Tuyamoyin reservoir, and more than 4 km3 in the Kayrakkum reservoir, and if parts of the reservoir are damaged for any reason, it will flood the Jizzakh, Syrdarya, Samarkand, and Bukhara regions. If the Tahtagul reservoir is damaged (it stores 19 km3 of water), there is a possibility of flooding the entire Fergana Valley regions [16]. Similar considerations can be made for other water storage reservoirs. Therefore, all kinds of factors and precautions should be taken to protect water storage reservoirs from various disasters. In particular, it is necessary to build primary and secondary retaining dams, each dam should be made of reinforced concrete, and other protective factors should be determined.

Conculasion. Damaging factors of floods. During floods, the water level rises and the areas adjacent to the river are flooded. During floods, people, agricultural crops, and livestock die. Floods cause significant material damage. Including,

Direct damage:

- damage to residential and industrial buildings, railways and highways, disruption of electricity and communication systems, failure of the meliorative system;

- destruction of livestock and agricultural crops;

- destruction or moistening of raw materials, fuel, food products, fodder, fertilizers;

- costs of temporary relocation of the population, relocation of material assets to safe places;

- washing away of the fertile soil layer and its burial under sand, mud or stones. [8]

Used literature

1. Law of the Republic of Uzbekistan “On Protection of the Population and Territories from Natural and Man-Made Emergencies” dated August 20, 1999. National Legislation Website of the Republic of Uzbekistan (www.lex.uz).
2. Law of the Republic of Uzbekistan “On Civil Protection” dated May 26, 2000. National Legislation Website of the Republic of Uzbekistan (www.lex.uz).
3. Resolution of the President of the Republic of Uzbekistan No. PP-585 dated February 19, 2007 “On Measures to Prevent and Eliminate the Consequences of Emergencies Associated with Floods, Mudflows, Snowdrifts and Landslides”. National Legislation Website of the Republic of Uzbekistan (www.lex.uz).
4. Resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated December 21, 2017 No. 1009 “On approval of the Regulations on the implementation of riverbed cleaning and shore strengthening works”. National legislation website of the Republic of Uzbekistan (www.lex.uz).

5. Resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated September 9, 2019 No. 754 “On improving the procedure for training the population to act in emergency situations and in the field of civil protection”. National legislation website of the Republic of Uzbekistan (www.lex.uz).
6. Order of the Minister of Emergency Situations of the Republic of Uzbekistan dated January 9, 2016 No. 9 “On improving the system of training rescuers of territorial departments and structural units of the Ministry”.
7. M. Tojiev, I. Nematov, M.Ilhomov, "Emergency situations and civil protection" Tashkent, 2002. B-83
8. Nigmatov I., Tojiev M., "Emergency situations and civil protection" textbook, Tashkent, 2011. B-74, 83, 96,108
9. Nurkhozhaev, M.Yu. Yunusov, I.Kh. Khabibullaev., Emergency situations and protective measures. Tashkent "University" 2001.
10. Tojiev M., Nigmatov I., "Safety of life" "Tafakkur-bostoni" Tashkent, 2012. B-54