

PROBLEMS ARISING FROM THE INTENSIVE MELTING OF MOUNTAIN GLACIERS IN UZBEKISTAN

Anvar Rasulov

Tashkent State Pedagogical University, Head Of The Department Of Geography And Its Teaching Methodology, Ph.D., Uzbekistan

Dilshod Dustnazarov

Tashkent State Pedagogical University Named After Nizomi, 1st-Level Student Of The Master's Degree In Methods Of Teaching Exact And Natural Sciences (Geography), Uzbekistan

ABSTRACT: This article combines the current state of research and knowledge on the melting of mountain glaciers in Uzbekistan, the current state and emerging issues.

KEYWORDS: Mountain glaciers, Tien Shan, Pamir, Gissar, Melting, trend, snow cover, anthropogenic.

INTRODUCTION

Our planet is experiencing a rapid increase in temperature in the coming years. Many believe that human activity, particularly the burning of fossil fuels and the resulting build-up of greenhouse gases in the atmosphere, has contributed to this warming trend. This, in turn, leads to the melting of mountain glaciers at a record level (in the last 15 years). According to three-dimensional satellite measurements of all the world's mountain glaciers, the faster melting of mountain glaciers is losing 31 percent more snow and ice per year than 15 years ago. melting of mountain glaciers is increasing in all the mountains of the earth.

Most of the mountain glaciers in Uzbekistan are located in the Western Tien-Shan mountains. Glaciers are formed in the mountains above 3500 m. Because, in the natural geographical conditions of Uzbekistan, the snow line passes through heights of about 3500 m. But there are very few regions of our Republic with heights of such an indicator. Therefore, mountain glaciers were formed along the western Tianshan, Hisor and main Hisor mountain ranges of Uzbekistan. Since the parts of the Nurota, Turkestan, Zarafshan ridges belonging to the territory of Uzbekistan are somewhat low, there are no glaciers, although there is sometimes a perennial snow cover along these areas.

We can observe the rapid melting of the mountain glaciers of Uzbekistan in the coming years. The main reason for this is the human factor. The melting trend of Uzbekistan's mountain glaciers, mainly in the Pamir, Tianshan, Zarafshan and Hisar ranges, is increasing year by year.

The melting of glaciers in our country reflects the local increase in temperature and is caused by the burning of coal, oil and gas. Some small glaciers are disappearing completely. The fact that

the small glaciers that existed five years ago at an altitude of 3500 meters in the Khisar mountains are almost gone today is saddening.

According to Swiss scientists, by 2050 the reserves of mountain glaciers will decrease by 50 percent, and by 2100 at least two-thirds will melt. Even the Alpine glaciers have been included in the UNESCO list due to the threat of extinction. From 1975 to 2019, the glaciers in Uzbekistan lost a quarter of their mass and continue to melt. The highest mountain peaks are still covered with snow and ice, but the vegetation has already been pushed to an altitude of 3,500 to 4,500 m. Previous temperatures have caused this line to be crossed below. According to scientists' forecasts, by 2100, 1.5/3 of all ice in the mountains of Central Asia will disappear.

Central Asian glaciers feed two of the largest rivers in Asia and thus provide water for 95 million people. Their loss leads to water shortages in Uzbekistan, Kazakhstan, Turkmenistan and several other countries. Agriculture will be significantly reduced: it will be difficult to grow cotton, rice and wheat without water.

Overexploitation of natural resources, unsustainable land use, and poor forestry management are contributing to the continued melting of mountain glaciers. These problems can be mitigated by developing a coherent strategic action. An approach to natural resource management in mountainous areas and its implementation in experimental facilities such as protected areas is a modern demand.

Meteorological data from the past decades confirm that the regional warming of Central Asia is higher than the global warming. The surface temperature in Central Asia is warmer in the winter months than at other times of the year. However, the maximum temperature in summer is also increasing. Since the 2000s, the maximum temperature increase has been observed in the southern regions of Central Asia. The number of days with temperatures above 40 °C is increasing. Climate change scenarios in Central Asia predict high temperatures. By 2030-2050, the regional average temperature will be 1-3 °C, and if emissions are not reduced, the air temperature may rise by 6 °C by the end of this century. Climate change has major implications for the security of water supplies.

But the most terrible consequence of regional warming in Central Asia is the melting of glaciers. Since the 1950s, the melting of Tianshan and Pamir glaciers has been 14-30%. Today, glaciers in Central Asia are losing 0.2-1% per year. Some small glaciers (less than 0.5 km²) have already completely melted. Glacial lakes and flood events have increased rapidly over the past 40 years due to glacial retreat. This danger is relevant for Central Asia. Scientists warn that more than 10 glacial lakes have disappeared in Uzbekistan alone.

As more than 200 current glaciers in Uzbekistan have changed their image, nature is also changing its appearance in a negative direction. If we protect the glaciers in our country, we will also protect our nature.

Recommendations for the preservation of existing glaciers in Uzbekistan:

- intergovernmental coordination among Central Asian countries on glaciers and natural disaster monitoring programs;
- improvement of the regional program on glaciological monitoring and transboundary water resources

- development of new proposals for long-term monitoring of permafrost, rock glaciers and buried ice
- adaptation of existing systems of early warning of natural disasters caused by glaciers, as well as testing and introduction of new technologies for early warning systems of natural disasters and installation of such systems
- creating a portal as a communication tool for regional glaciological data transfer and risk assessment, including existing data, reports, maps, contact information, etc.
- preparation of a catalog of natural disasters caused by the pulsating glaciers and glaciers of the Pamirs and Tianshan in two periods.
- delivering information to the general public and interested parties.

As we continue to implement the above-mentioned works, we will have a clearer understanding of the mountain glaciers of Uzbekistan and their preservation.

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