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Snowfall decline reducing Himalayan glaciers' mass

By Himanshu Nitnaware, Pune Mirror | Jan 21, 2020, 06.00 AM IST



Himalayan glaciers feed major rivers; FILE PHOTO

A joint study has revealed that an increase in rainfall is decreasing glacial ice

Loss in snowfall due to an increase in rainfall is causing a reduction of glacial ice mass in the Himalayas, scientists have discovered.

This was revealed by a joint study by scientists at Indian Institute of Science Education and Research (IISER), Pune, and other institutions like IISER, Bhopal, Indian Institute of Technology (IIT), Indore, and Institute of Maryland, USA on factors governing loss of snow mass on glaciers.

Snowfall is the governing factor that contributes to the glacier mass gain and reduces the melting of the glacial ice. Himalayan and Karakoram glaciers are important as they are one of the major sources of many of the major rivers in subcontinent, like the Indus, Ganga and Brahmaputra.

The scientists found that due to the local heating and warm climate conditions, the rate of snowfall has decreased and as more and more snow is converted to rain, it has resulted in the loss of glaciers.

“Himalayan mountains and glaciers receive snow during the summer monsoon season. But with warming weather conditions, snowfall expected in these seasons is converting into,” said Argha Banerjee, a scientist at IISER, Pune.

Banerjee said that snowfall has two major benefits in the ranges. “Snowfall helps to reduce the rate of glacier melt as fresh white snow reflects the sunlight strongly. Also, snowfall adds to the existing amount of glacial ice,” he added.

With a reduction in snowfall, the rate of glaciers melting has increased, he said.

The scientists used modelling techniques to understand the rate at which glaciers are melting and the importance of the factors like rainfall, snowfall, humidity, radiation from the sun and other aspects controlling the glacier melt.

Mohammed Farooq Ahmed, a scientist at IIT Indore, said that unlike the Karakoram ranges which continue to receive good snowfall despite warming, Himalayan glaciers are showing strong signs of melting, which may ultimately affect the water requirements of the population.

“It is predicted that with such conditions, the population alongside the Indus would be affected the most,” he added.

Ahmed said that water availability of the upstream areas or arid regions of Ganges and Brahmaputra will be affected too.

“However, plain areas of river Ganga and Brahmaputra will not be affected much as they receive most of the water from summer monsoon,” Ahmed added.

The scientist said that studies related to snow are few and more such studies are needed. “A good number of studies have been done on glaciers, but this may be the first time that influence of snow in controlling glacier melt variation in the Himalaya-Karakoram region has been quantified,” he told Mirror.