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WORLD Avalanches Add Topic

A collapsing glacier destroyed a Swiss village. Is climate change to blame?

The natural disaster shows a volatile combination of climate change effects, fragile natural environments and human development.

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A small village in the Swiss Alps has been engulfed by ice, mud, and rock in a rare natural disaster that points to an uncertain future as unstable mountainous glaciers can break apart in destructive avalanches.

A swirling and volatile combination of climate change effects, fragile natural environments and human development contribute to the danger, leaving experts concerned about what the future may hold.

While similar avalanches occasionally happen in the Alps, one hasn't impacted a populated region for over a hundred years.

"It’s critical to realize that we now have left the space of historical precedence and entered an era where we face new hazards from locations that have never been a problem in the past and where protection may be technically hardly possible or financially unfeasible," Christian Huggel, a professor of environment and climate at the University of Zurich, told USA TODAY via email.

Studying this kind of disaster isn't easy, partly because such "ice-rock-debris" avalanches often occur in isolated areas so gathering good data is a challenge.

"Statistics are difficult here but it seems that the past 5-10 years have brought more such critical situations in the Swiss Alps than in the earlier past. We should definitely prepare for more of the kind in the future," Huggel said.

What happened in Blatten, Switzerland?

As much as 90% of Blatten, Switzerland, is now engulfed by ice, mud, and rock after what scientists suspect is a dramatic display of the impact of climate change on mountain communities.

"We've lost our village," Matthias Bellwald, the mayor of Blatten told a press conference after the slide. "The village is under rubble."

A video shared widely on social media showed the dramatic moment when the glacier partially collapsed, creating a huge cloud that covered part of the mountain as rock and debris came cascading down towards the village.

More: Swiss glacier collapses, burying village: Video, satellites show Blatten before and after

Are ice-rock-debris avalanches rare?

While recently rare in the Alps, "events of the dimension of the 'ice-rock-debris avalanche' in Blatten are known from and studied in regions like the Himalayas or Alaska over the past several decades," Huggel told USA TODAY via email.

A similar event happened in April 2024, but did not affect population centers, said Huggel. But the destruction of large parts of a village (with 300 inhabitants) "has in fact no historical precedence in the 21st and 20th century."

Before that, there was a landslide in Goldau in 1806 and one in Elm in 1881, where more than 400 and 100 people lost their lives, respectively, Huggel said.

Climate change makes for an uncertain future

"Higher average annual temperatures may lead to more glaciers, especially in steep terrain, becoming 'unstuck' from their beds, or mountain permafrost, which can keep mountain slopes frozen together, thawing and making such slopes less stable," said Bruce Raup, a senior associate scientist at the National Snow and Ice Data Center.

Raup told USA TODAY that globally speaking, such events happen in steeper, younger mountain ranges such as the European Alps and the Himalaya where erosional processes are more active. Risk is higher if there are people or infrastructure near potential mass movements, or downstream where a blocked stream could lead to flooding.

How the ice-rock-debris avalanche unfolded

ABC News reports that an uptick in glacier melt had been observed at Birch Glacier, and emergency managers ordered hundreds of villagers to evacuate.

Huggel called what happened next "a complex interaction of various processes of rock slope instability."

According to Raup, "the event was a massive rock avalanche/landslide falling onto a glacier that then collapsed and went down together with the rock mass."

While various factors were at play in Blatten, it was known that local permafrost had been affected by warmer temperatures in the Alps. The loss of permafrost can negatively affect the stability of the mountain rock, which is why climate change had likely played a part in the deluge, Huggel said.

(This story has been updated to add new information.)

Contributing: Reuters