Alpine ski resorts could lose up to 70% of snow cover by 2100 – experts
New study says global warming likely to see snowfall replaced by rain across the Alps, with knock-on effects for tourism-dependent villages

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Alpine ski resorts are facing the loss of up to 70% of their snow cover by the end of the century, experts have said.

Even in the best-case scenarios, global warming is likely to see snowfall replaced by rain across the Alps, according to a report in the European Geosciences Union (EGU) journal the Cryosphere.

It says mathematical climate models predict that “bare alpine slopes could be a much more common sight in future”.

“Since many alpine villages are heavily dependent on winter tourism, the economy and society of regions with such tourism centres will suffer,” Sebastian Schlögl, one of the report’s authors wrote.
Last year the Swiss Alps had their driest December since records began 150 years ago. 2016 was the third year in a row with little snow at Christmas, when many families go skiing.

If global warming is limited to 2°C, the target set in the Paris climate change agreement, the loss of snow cover in the Alps would be 30% by 2100, the report said. Were the temperature to rise above this target, the snow cover would dwindle by 70%, it added.

The research was carried out by scientists at the Institute for Snow and Avalanche Research (SLF) and the Cryos Laboratory at the École Polytechnique Fédérale in Switzerland.

It also suggests that the season when natural snow is deep enough for winter sports such as skiing and snowboarding is likely to become shorter.

In a report entitled How much can we save? Impact of different emission scenarios on future snow cover in the Alps, the lead author Christoph Marty, SLF’s research scientist, writes: “The alpine snow cover will recede anyway, but our future emissions control by how much.

“The majority of the climate models used project slightly increasing winter precipitation towards the end of the century. However, since temperatures are clearly increasing simultaneously, we may experience increasing rainfall and not snowfall.”

Marty added: “We hope our results convincingly show that even increasing winter precipitation cannot compensate for the effect of the strongly increasing temperatures.”

The team’s projections show that the layer of snow covering the Alps would lose depth “for all elevations, time periods and emission scenarios”.

The report says: “The most affected elevation zone for climate change is located below 1,200m, where the simulations show almost no continuous snow cover towards the end of the century.”

About a quarter of the ski resorts in the Alps are below this altitude.