

Alpine summits may have been ice-free during life of Tyrolean Iceman

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Alpine summits at 3,000 to 4,000 m may have been ice free until about 5,900 years ago, just before the lifetime of the Tyrolean Iceman (Oetzi), when new glaciers started to form, according to a study published in *Scientific Reports*. The findings suggest that only the highest Alpine summits (4000 m and above) remained covered in ice for all of the current geological epoch, the Holocene, which began approximately

11,650 years ago.

Understanding how past glacier dynamics related to changes in climate, may help assess the pace of future glacier loss in the Alps, and previous research dated the [oldest ice](#) at some summits above 4,000m to 11,500 years ago.

Pascal Bohleber and colleagues analyzed two ice cores collected at 3,500m altitude from ice frozen to the bedrock of the Weißseespitze [summit](#) glacier in the Oetztal Alps, Austria. This site is 12 km from where the Iceman (dated to 5,100 to 5,300 years ago) was found at 3,210 m. Using [radiocarbon dating](#)—a key tool for determining the age of prehistoric samples—the authors found that the ice just above the bedrock at 11 m depth was 5,900 years old. As the ice just above the bedrock is the first to have formed after an ice-free period, determining its maximum age can identify past ice-free periods.

Although the findings indicate that deglaciation of Alpine summits at below 4,000m during the Holocene is not unprecedented, further information is needed on whether deglaciation is currently occurring at an unprecedented pace. Under current melt rates the old ice just above the bedrock, which is a sensitive archive of glacier change, may be lost within the next two decades, according to the authors.

More information: New glacier evidence for ice-free summits during the life of the Tyrolean Iceman, *Scientific Reports* (2020). [DOI: 10.1038/s41598-020-77518-9](#) , www.nature.com/articles/s41598-020-77518-9

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