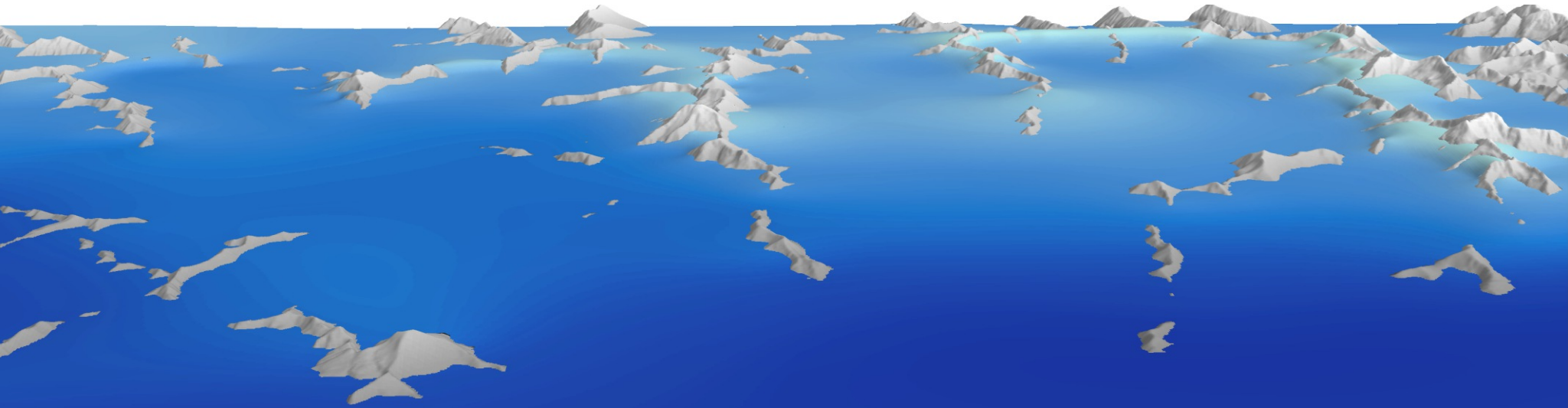


Landscape evolution of the Sölk Valleys and adjacent regions from the last Interglacial to today (Niedere Tauern range, Austria)

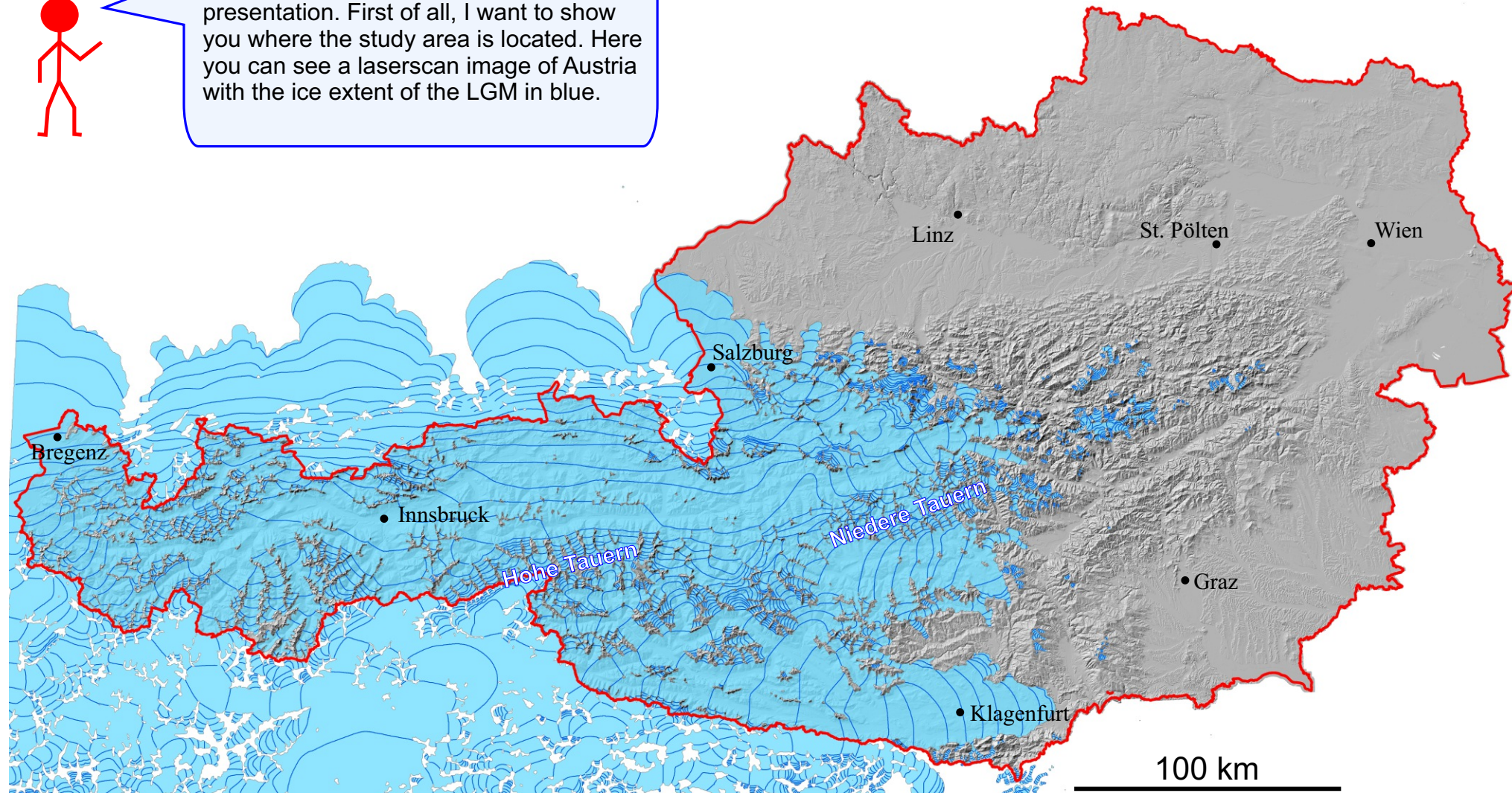
Gerit E. U. Griesmeier, Jürgen M. Reitner and Daniel P. Le Heron



Study area



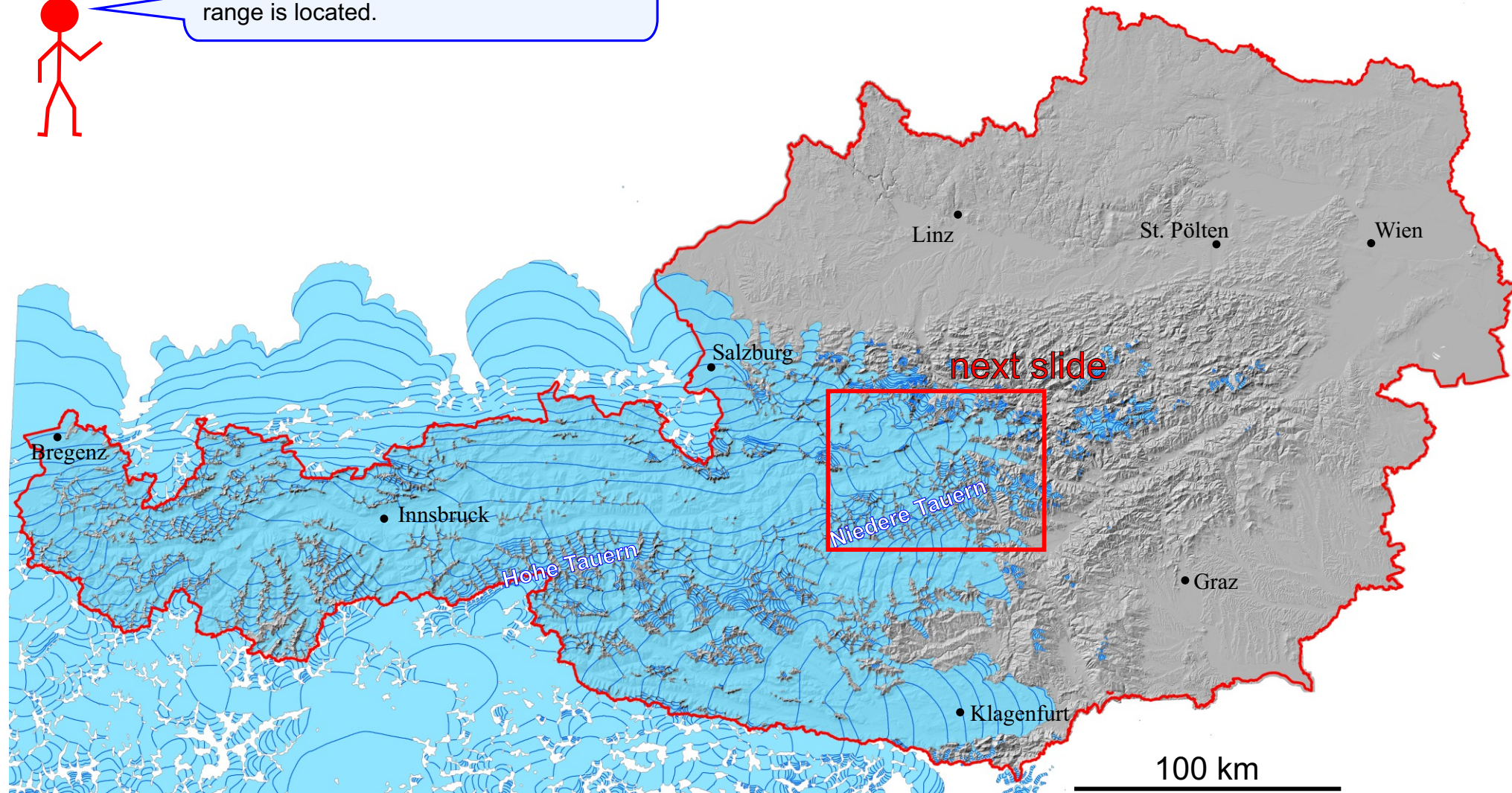
Hello,
Nice to see you clicking through my short presentation. First of all, I want to show you where the study area is located. Here you can see a laserscan image of Austria with the ice extent of the LGM in blue.



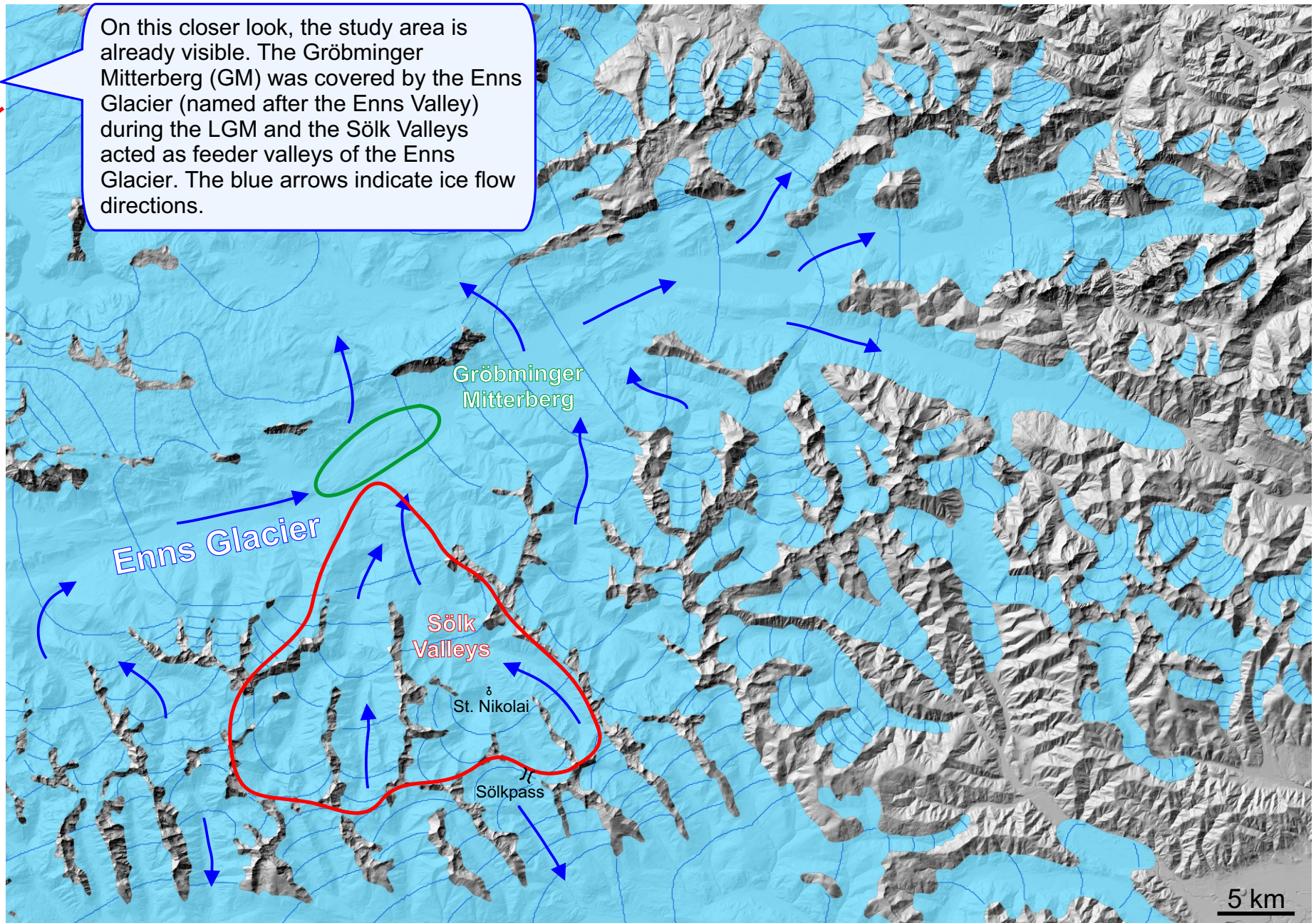
ice extent (blue): van Husen (1987)

Study area

Now we zoom into the center of Austria, where the Niedere Tauern mountain range is located.



Study area



view towards E

This is how the GM looks like in the field. Beautiful landscape, isn't it? For clarification, the GM is the flat hill among the valley.

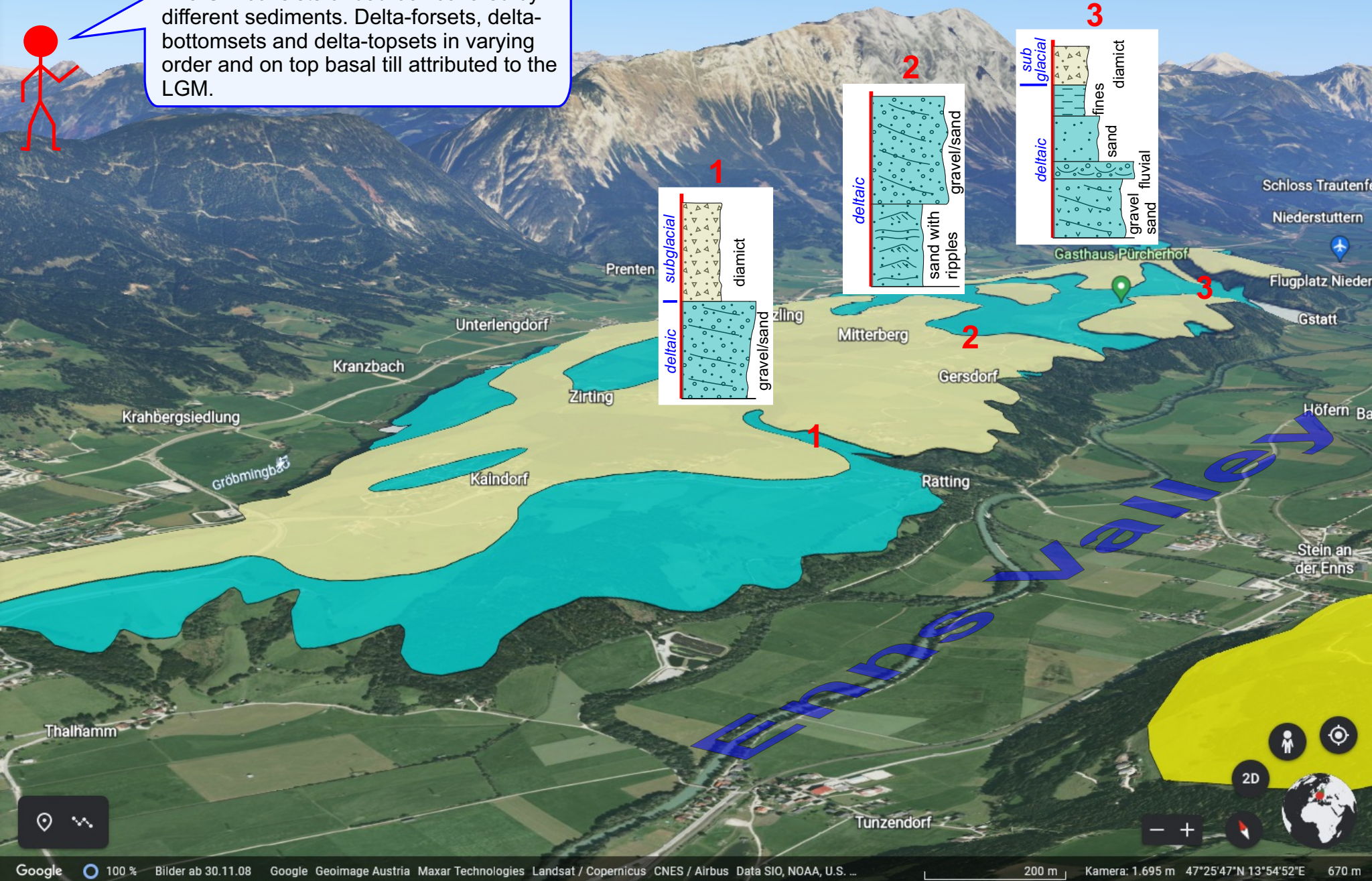
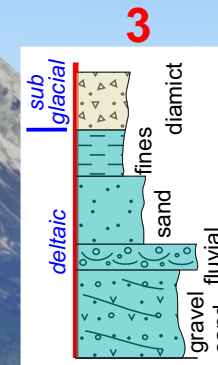
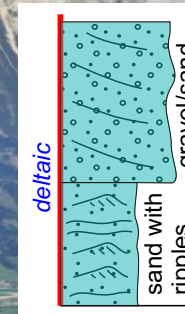
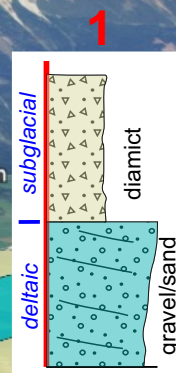
Gröbminger
Mitterberg

Enns Valley

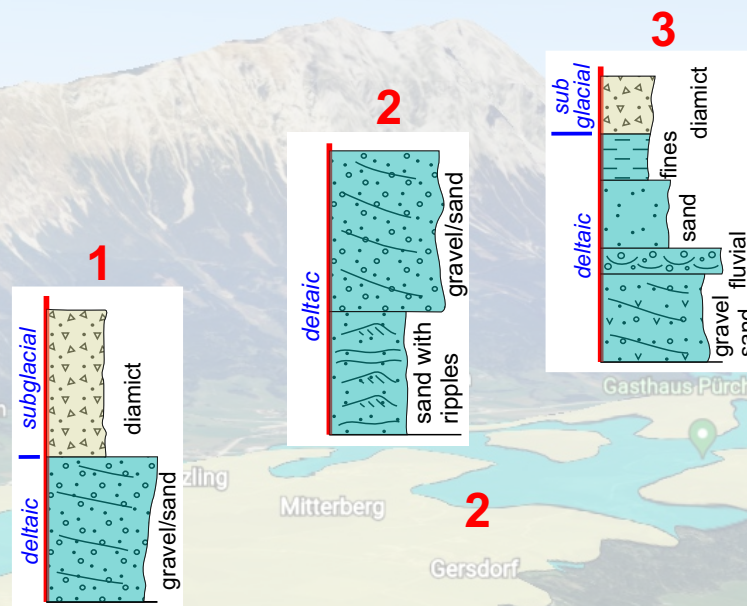
~ 1 km

view towards E

The GM consists of bedrock covered by different sediments. Delta-forsets, delta-bottomsets and delta-topsets in varying order and on top basal till attributed to the LGM.

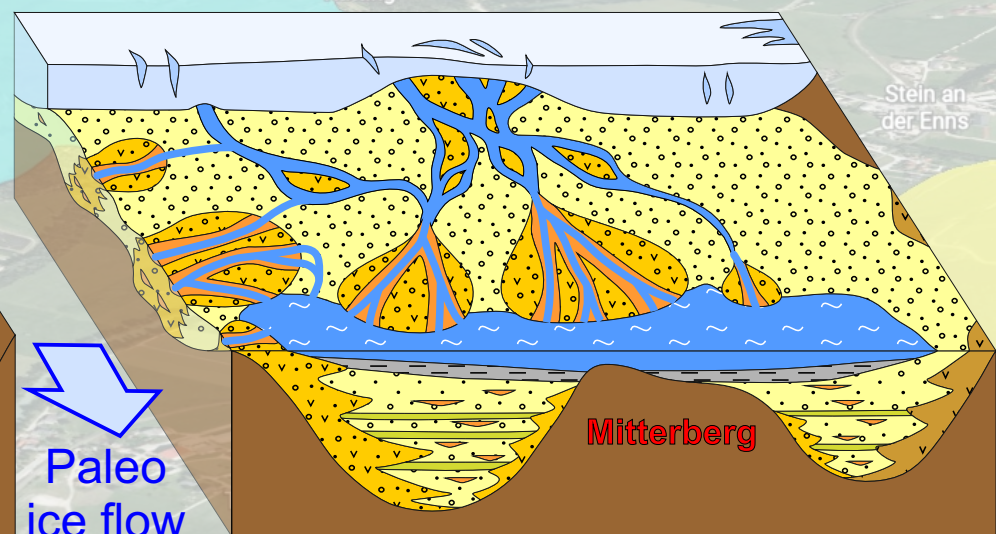
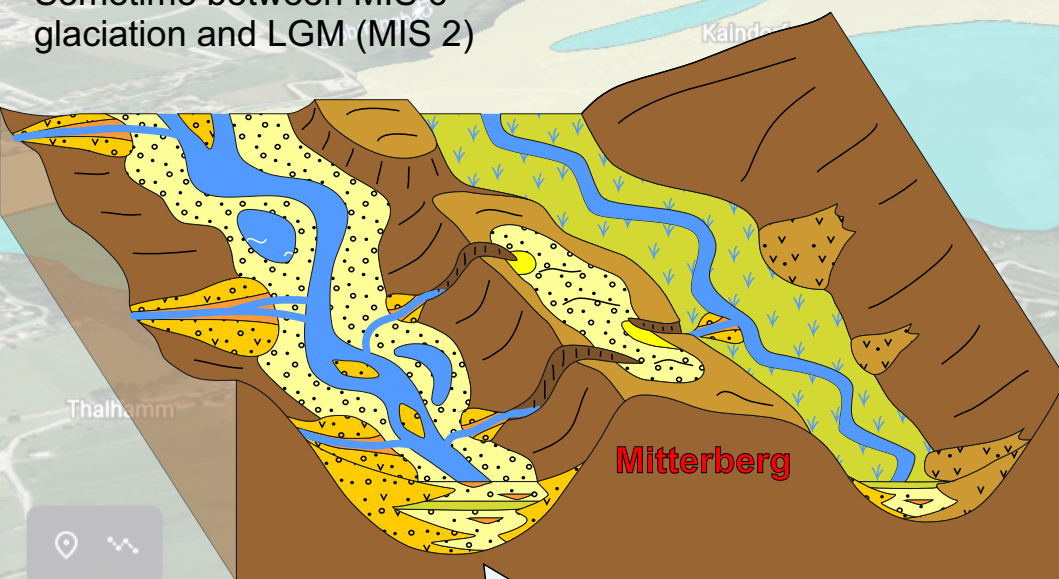


On the left block diagram, you can see that after glacial erosion of the penultimate glaciation the Enns Valley is filled again with mainly fluvial sediments. On the right diagram you can see that shortly before the LGM, the Enns Valley floor aggraded till the top of GM. In a lake, fine grained sediments were deposited, which were transgressed by delta-foresets of a large braided river system (see also profile 2).



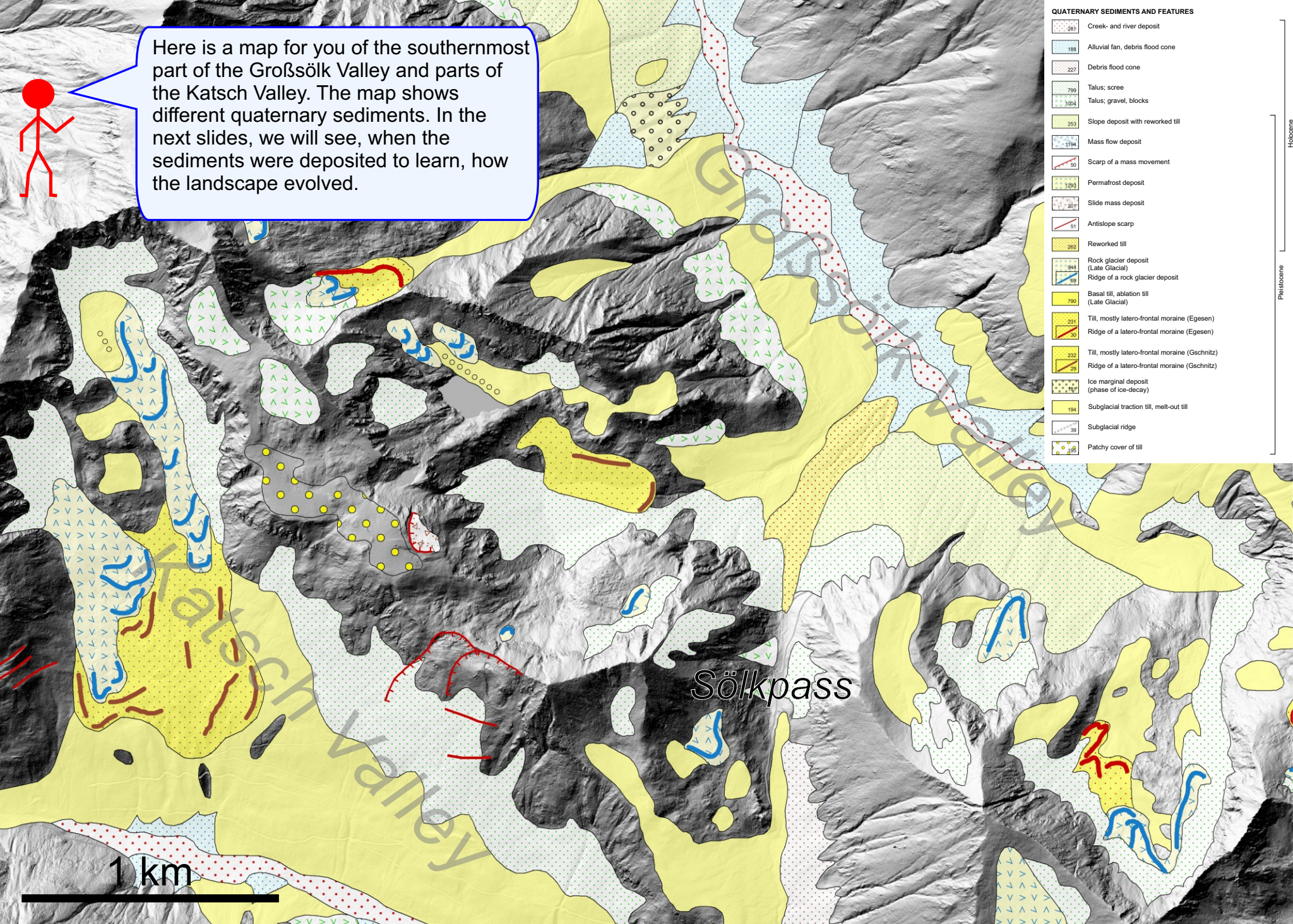
Sometime between MIS 6 glaciation and LGM (MIS 2)

Glacial advance phase at beginning of LGM (MIS 2)

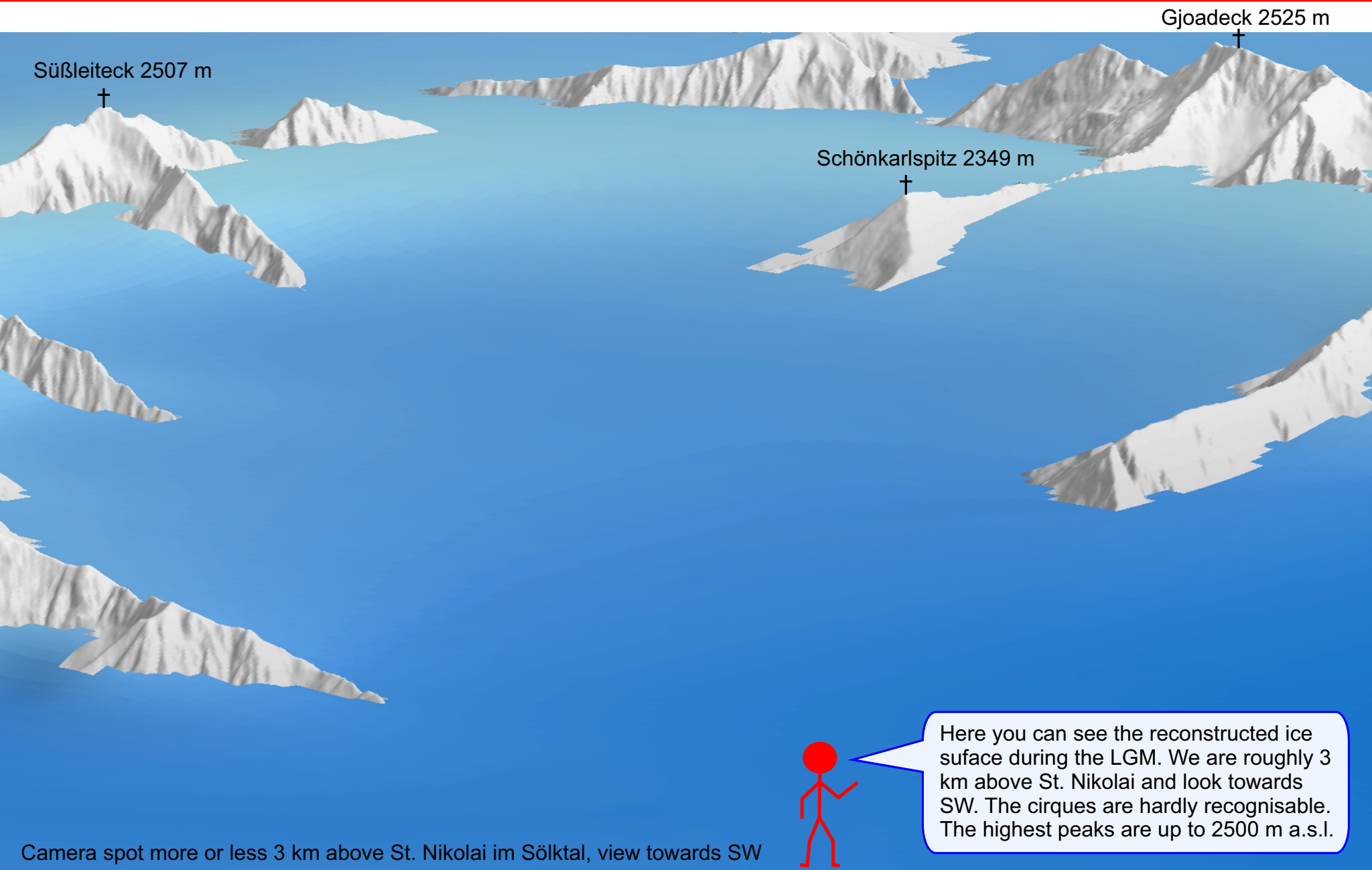


Enns Valley

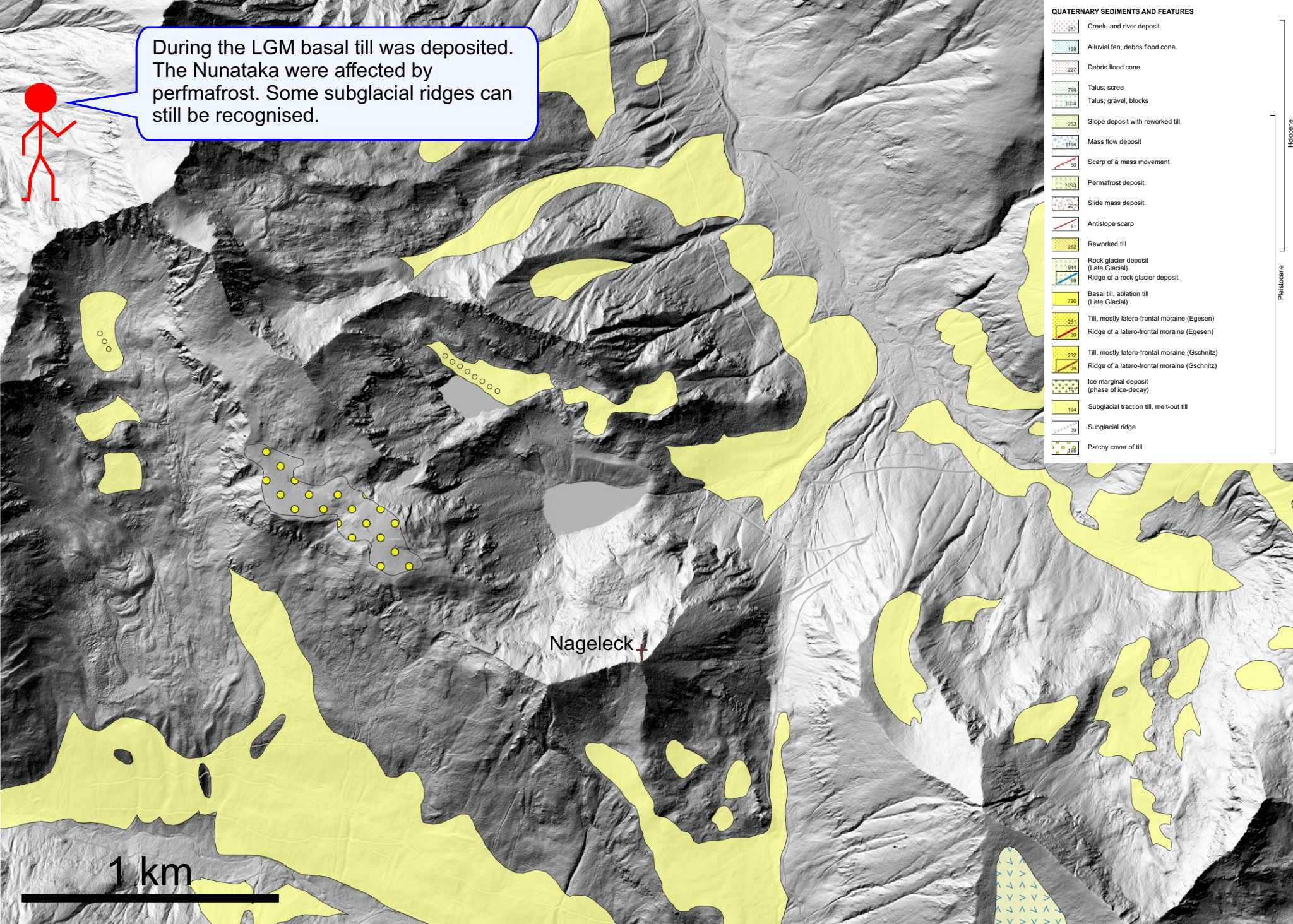
Here is a map for you of the southernmost part of the Großsölk Valley and parts of the Katsch Valley. The map shows different quaternary sediments. In the next slides, we will see, when the sediments were deposited to learn, how the landscape evolved.

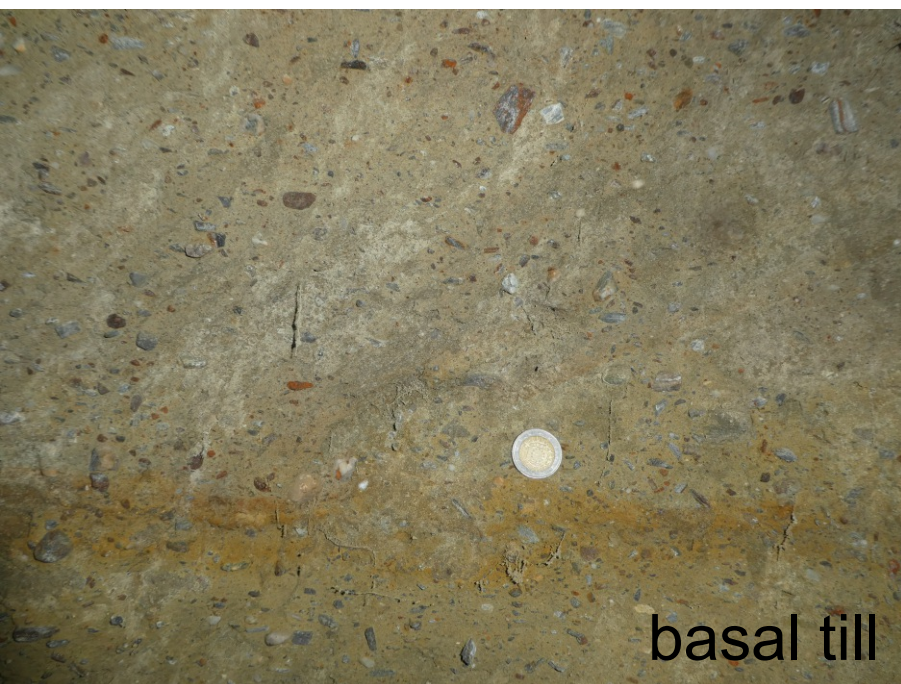


LGM



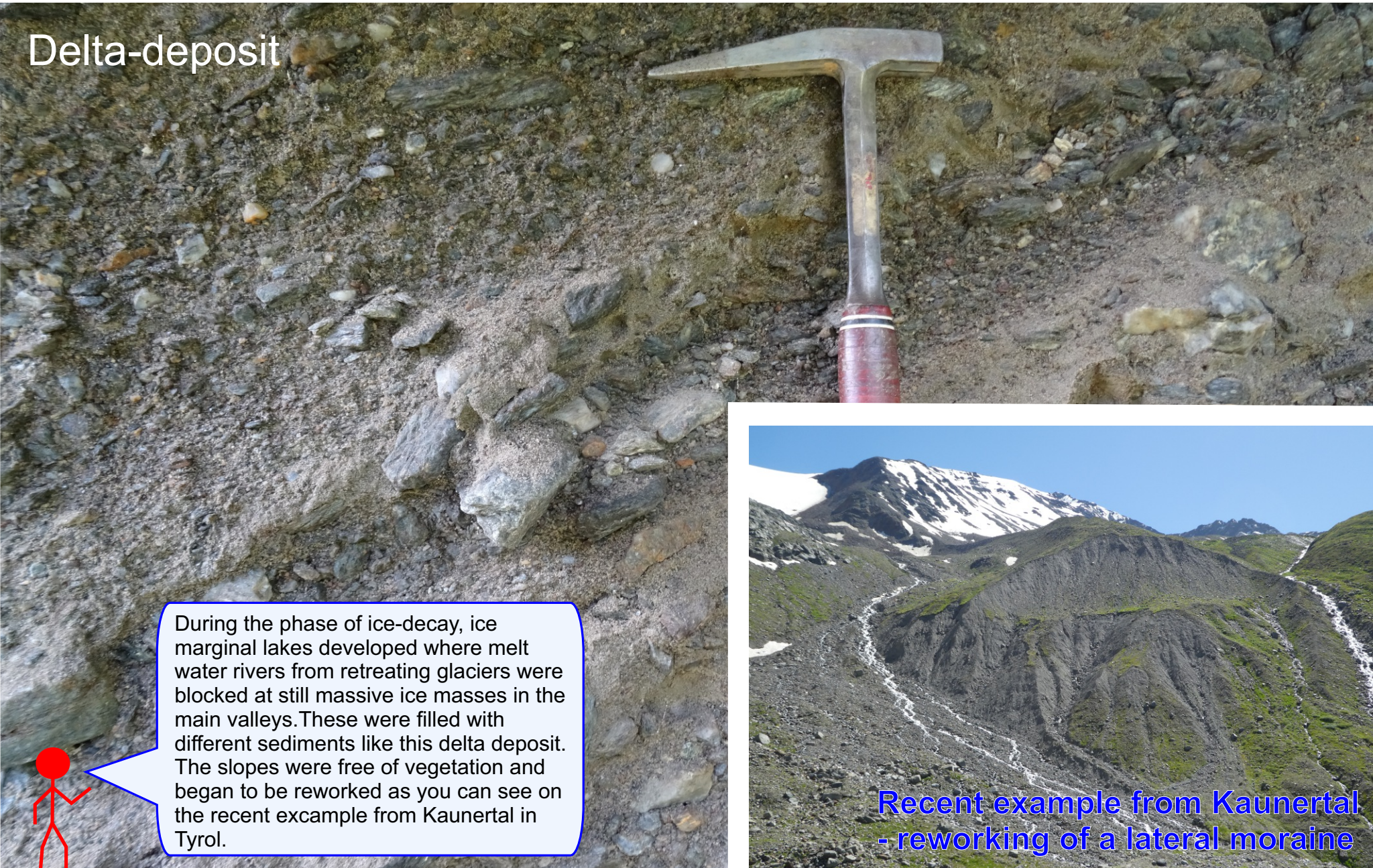
During the LGM basal till was deposited. The Nunataka were affected by permafrost. Some subglacial ridges can still be recognised.



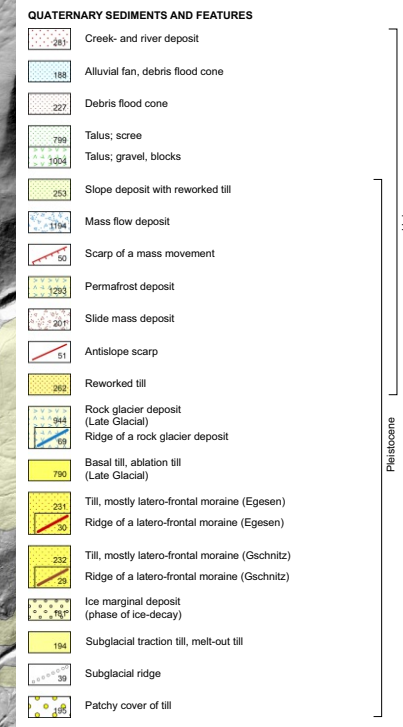


Phase of ice-decay

Delta-deposit



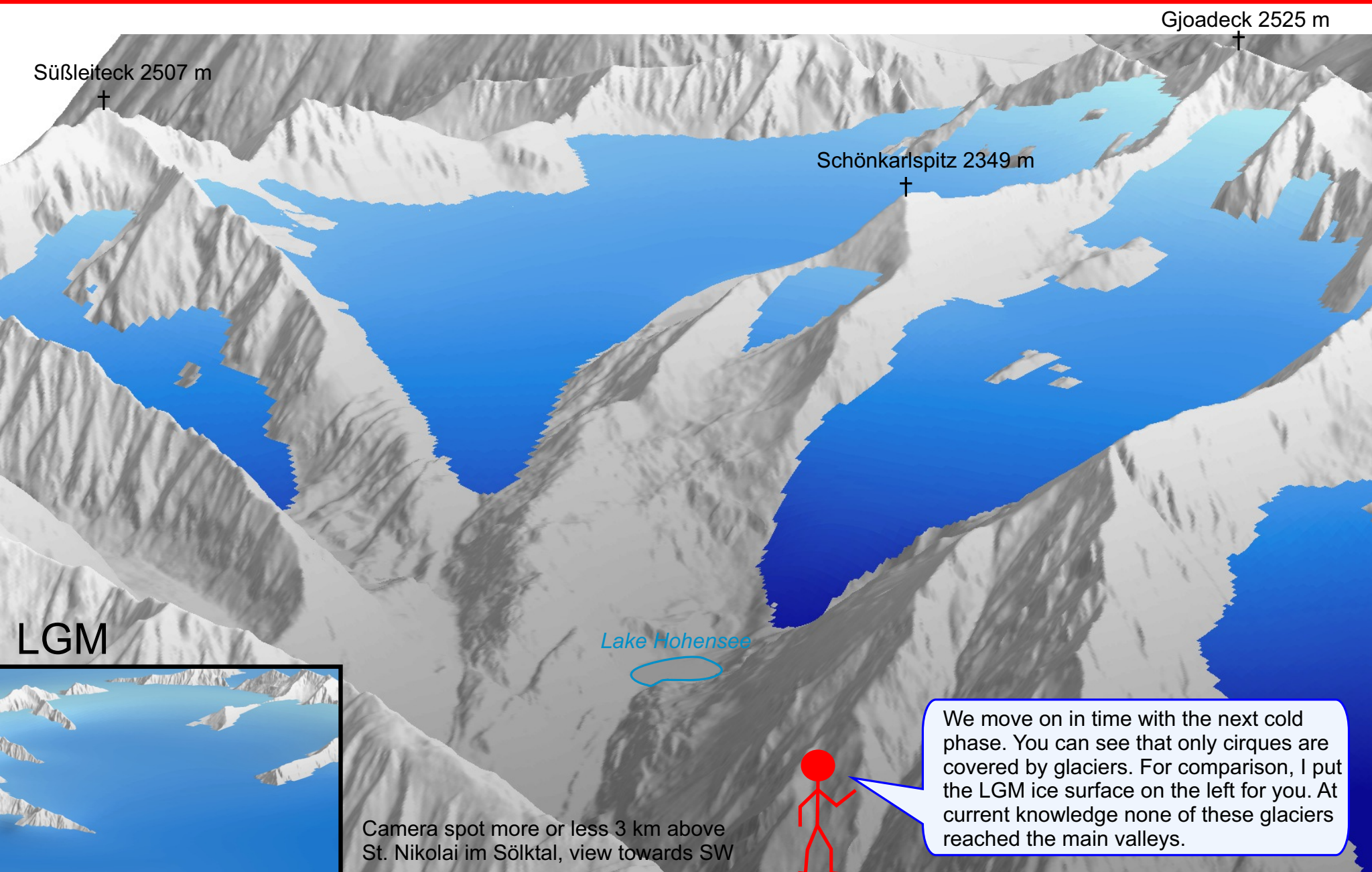
Here you see that the map is filled with a few additional sediments. These are mainly reworked slope sediments and a small ice marginal deposit.




L. Kaltenbachsee

1 km

Gschnitz stadial (~17-16 ka)



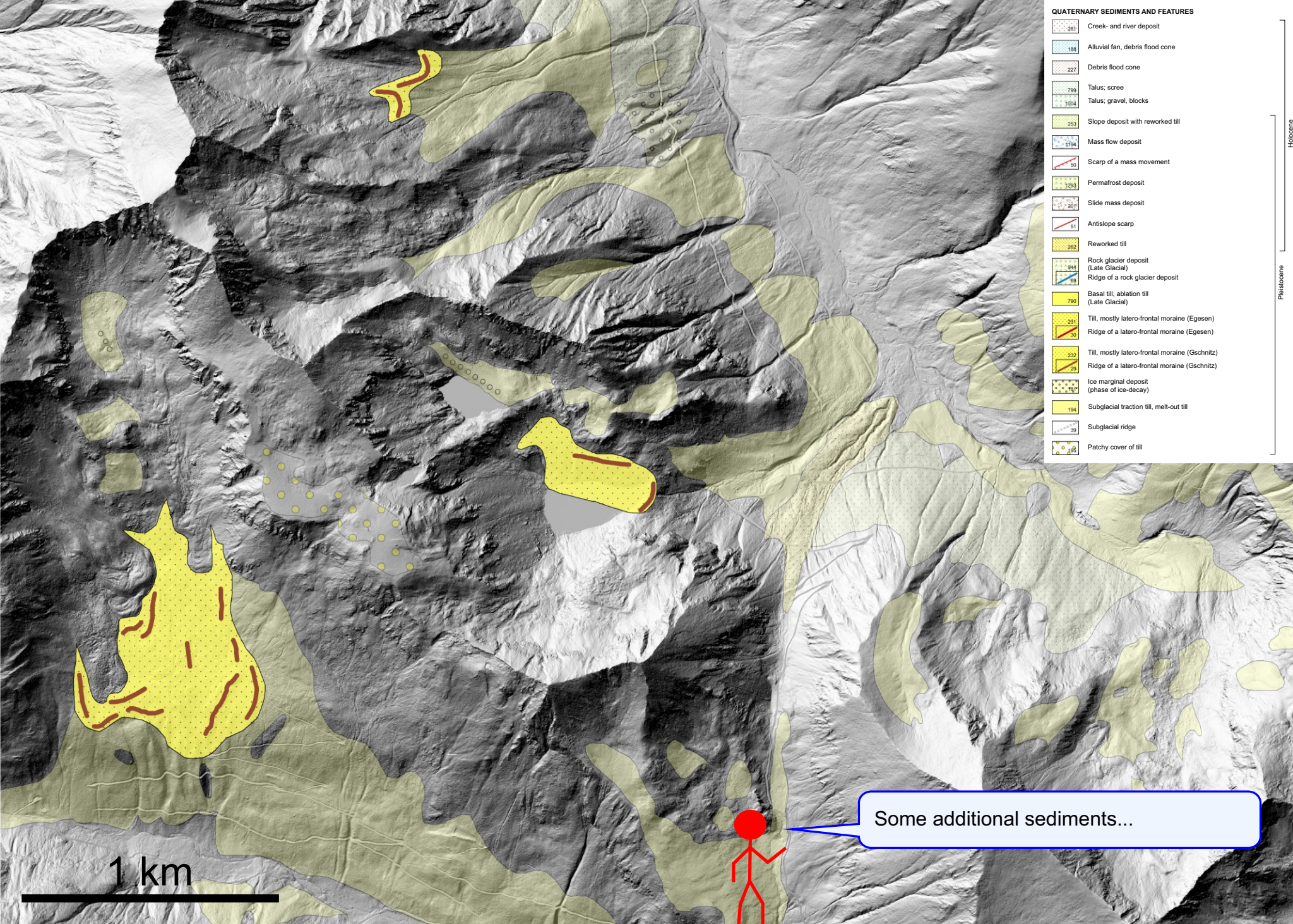


This lake is dammed by a latero-frontal moraine, which was probably formed during the Gschnitz stadial.

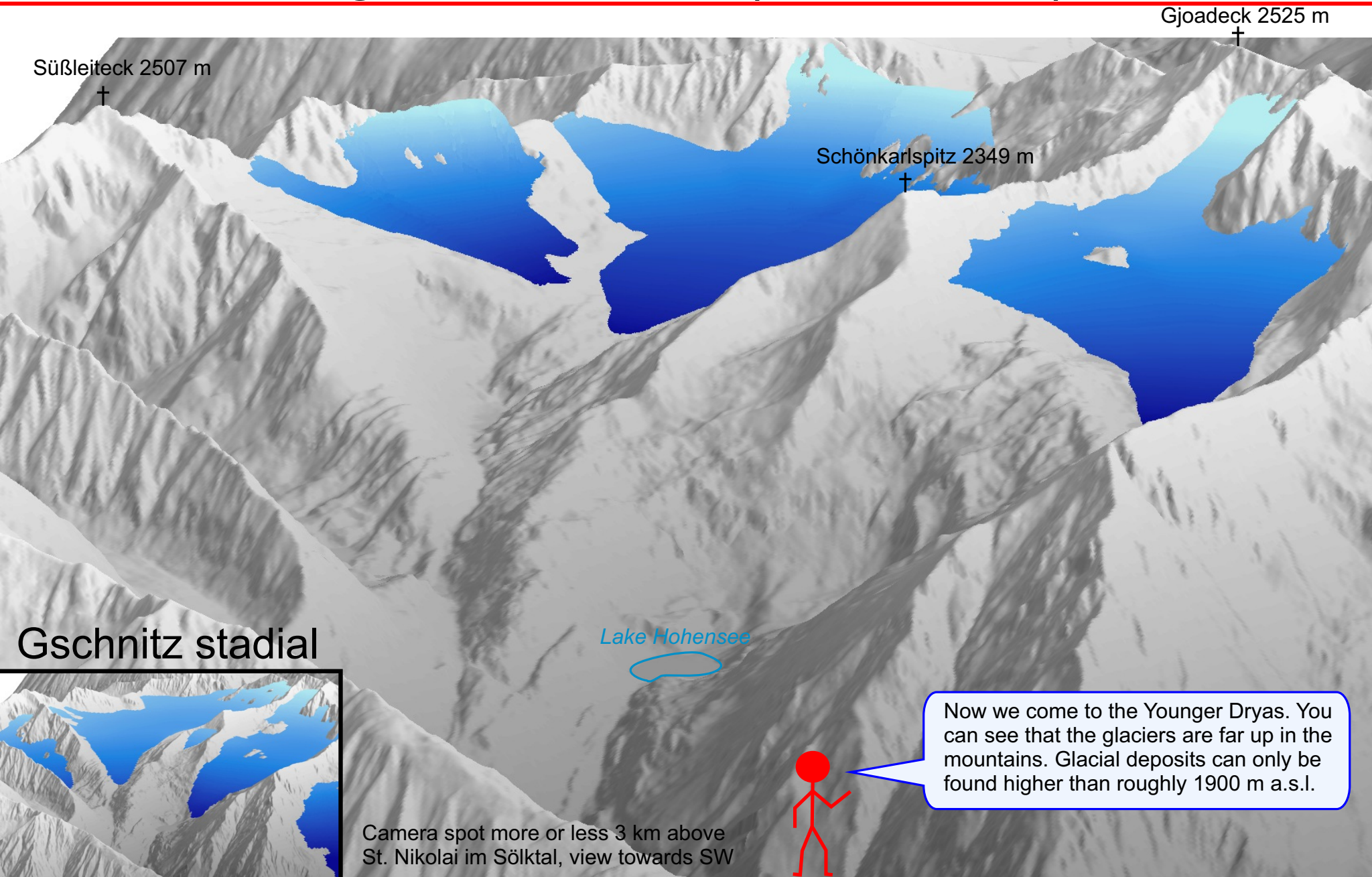
frontal moraine


lateral moraine

Moraineridge at Kaltenbachsee

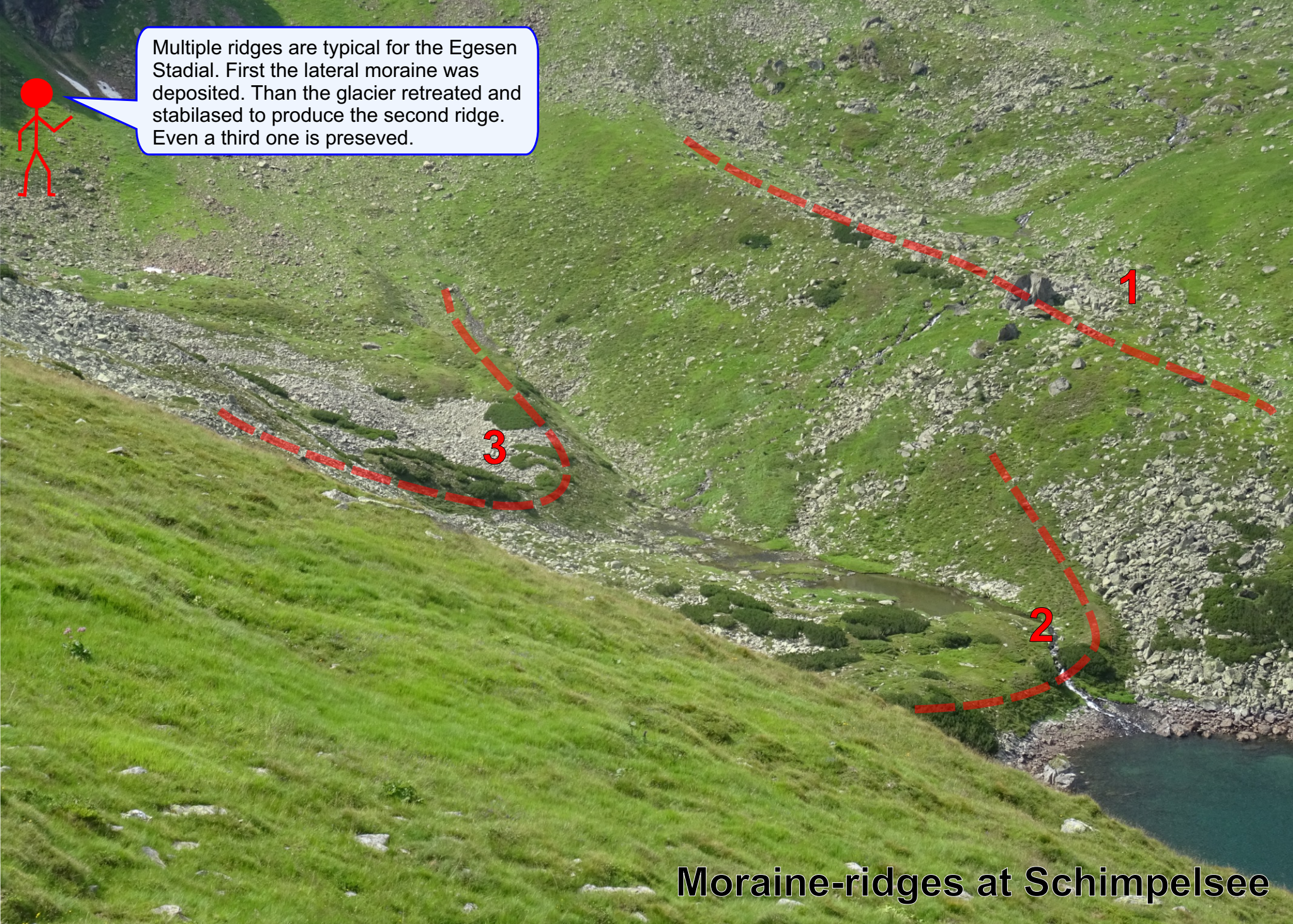


Egesen stadial (~13-12 ka)






Multiple ridges are typical for the Egesen Stadial. First the lateral moraine was deposited. Then the glacier retreated and stabilised to produce the second ridge. Even a third one is preserved.



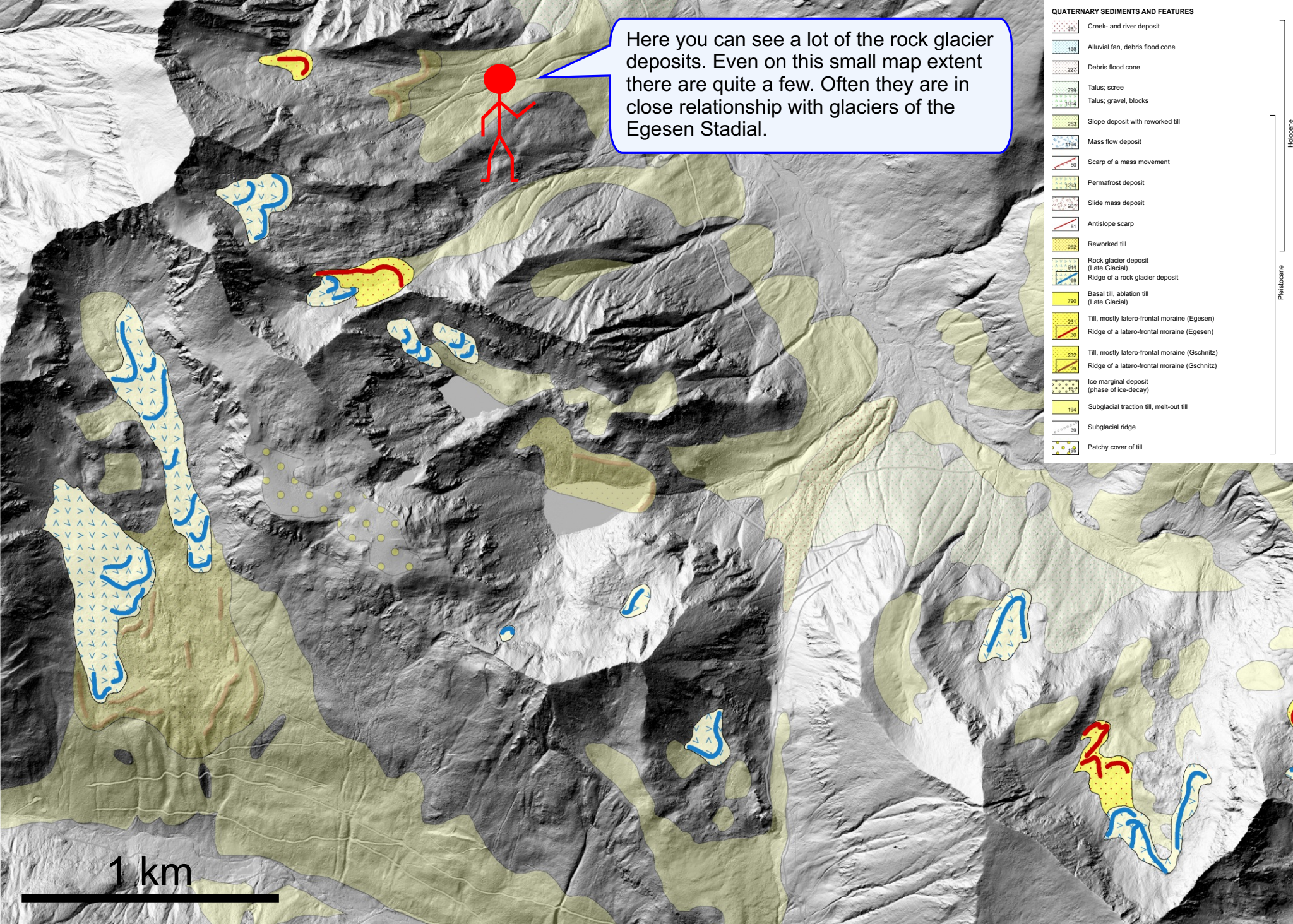
Moraine-ridges at Schimpelsee



Also very typical for this time frame are rock glaciers. There are lots of them in the study area. Several small ones, single very large ones and on the picture you can see a medium sized one. Today it is not active anymore.

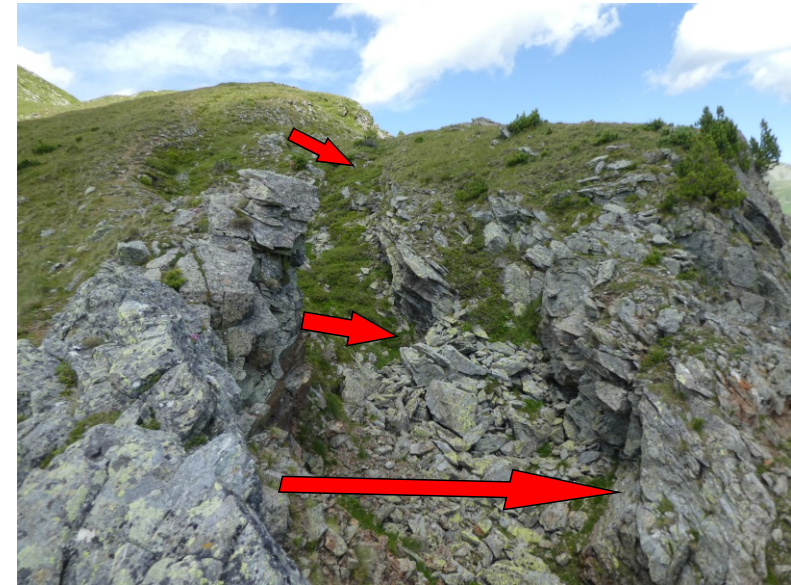
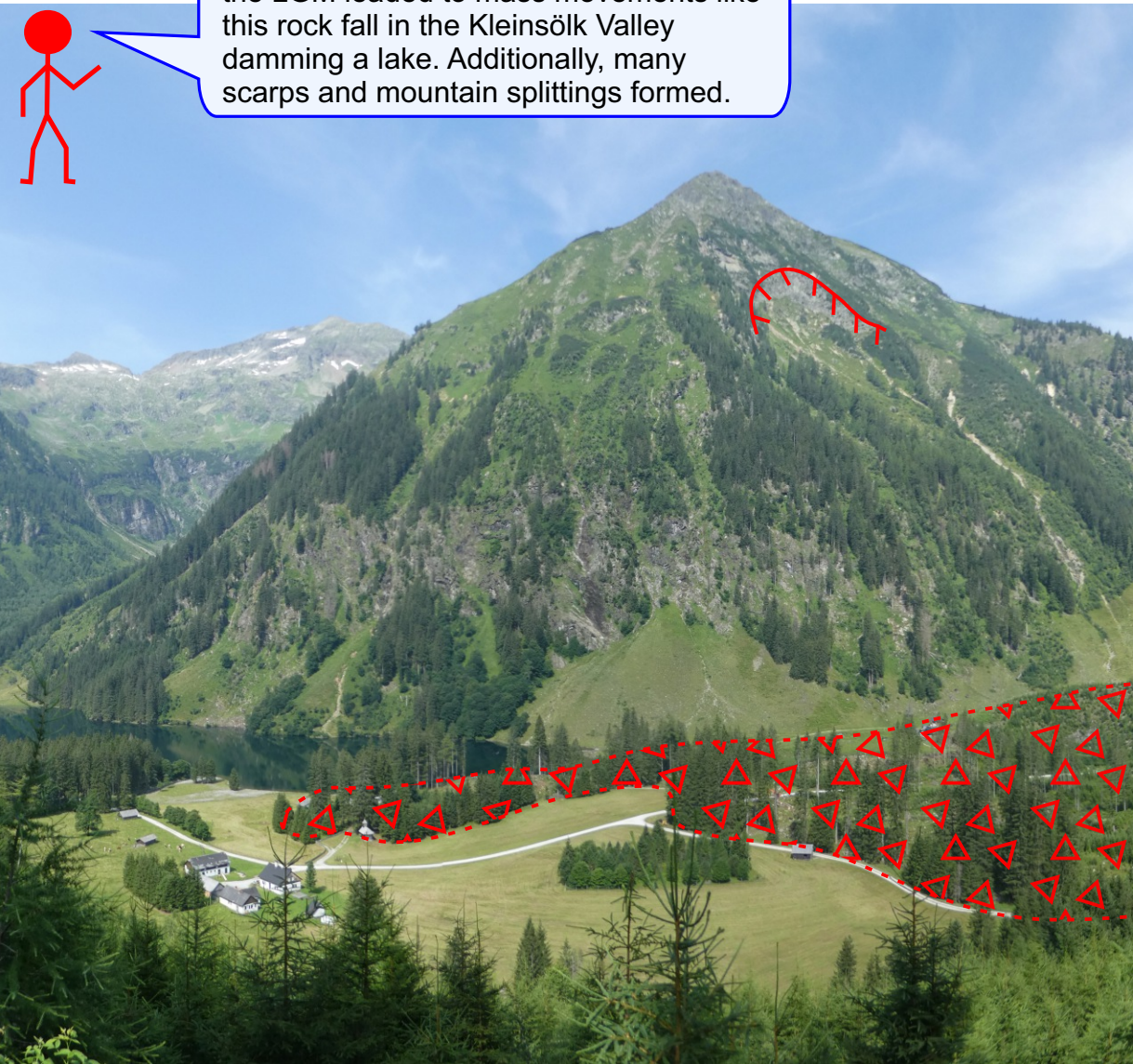


Relict rock glacier




Holocene

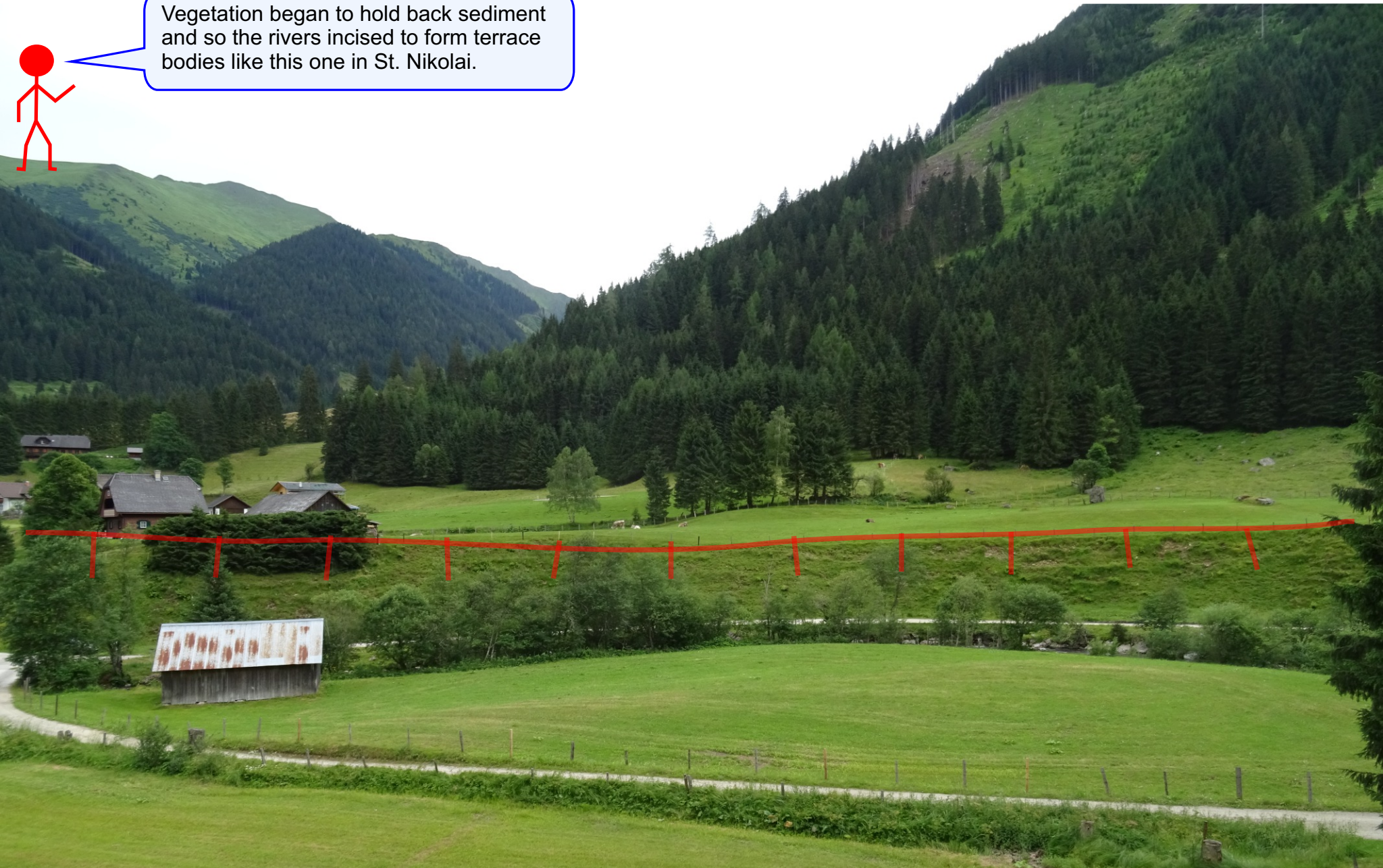
The oversteepening of the slopes during the LGM led to mass movements like this rock fall in the Kleinsölk Valley damming a lake. Additionally, many scarps and mountain splittings formed.



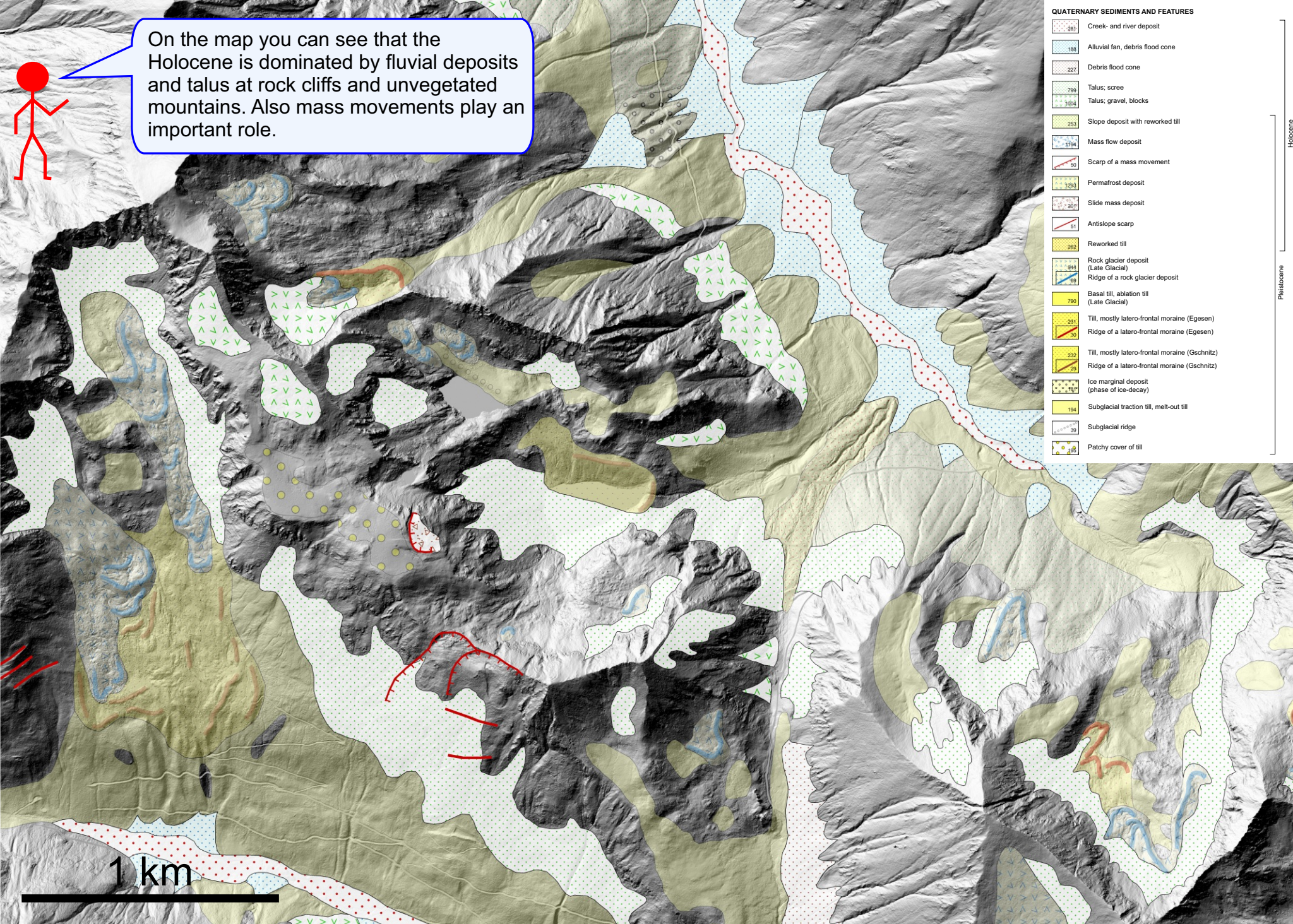
Holocene



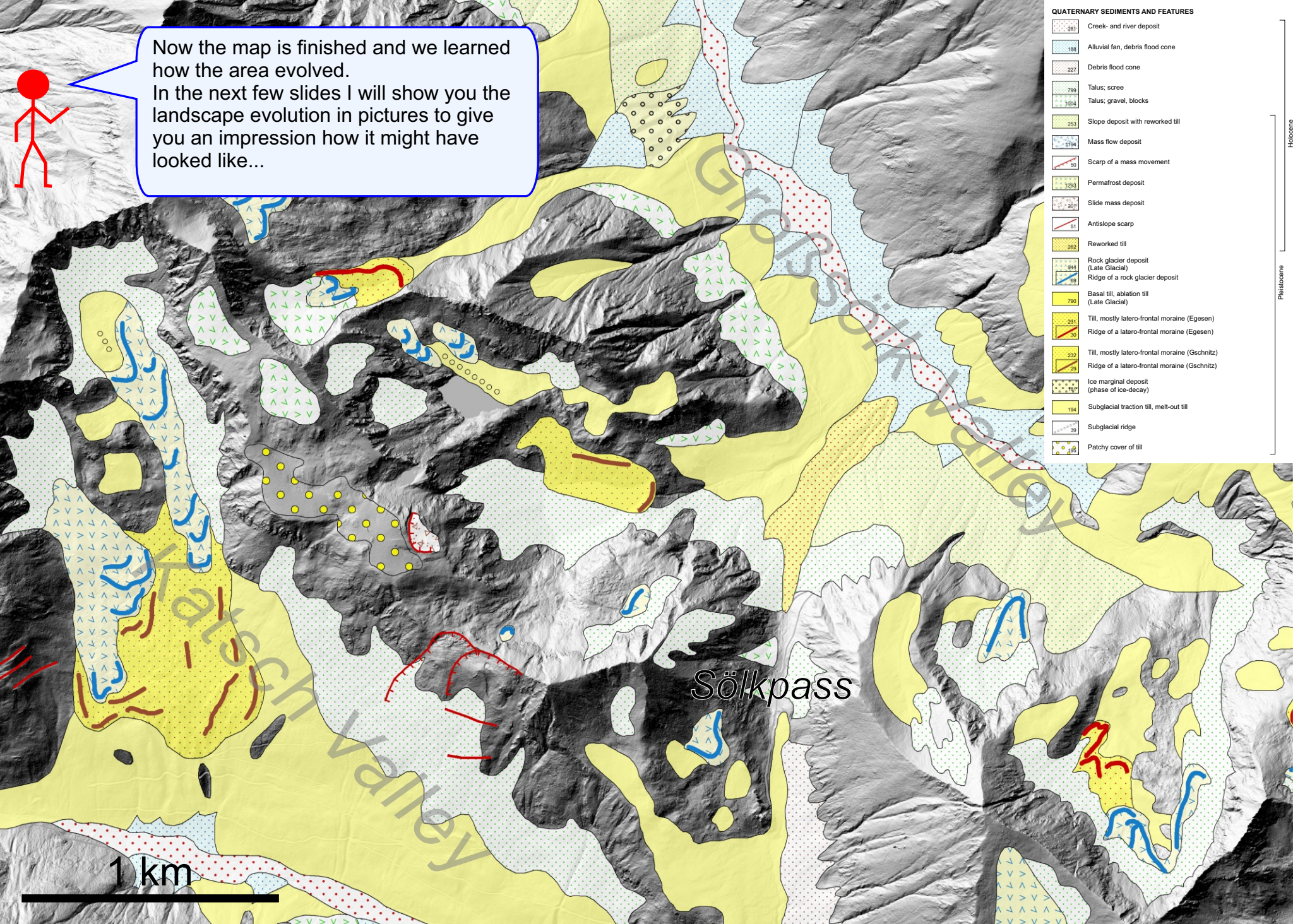
Vegetation began to hold back sediment and so the rivers incised to form terrace bodies like this one in St. Nikolai.



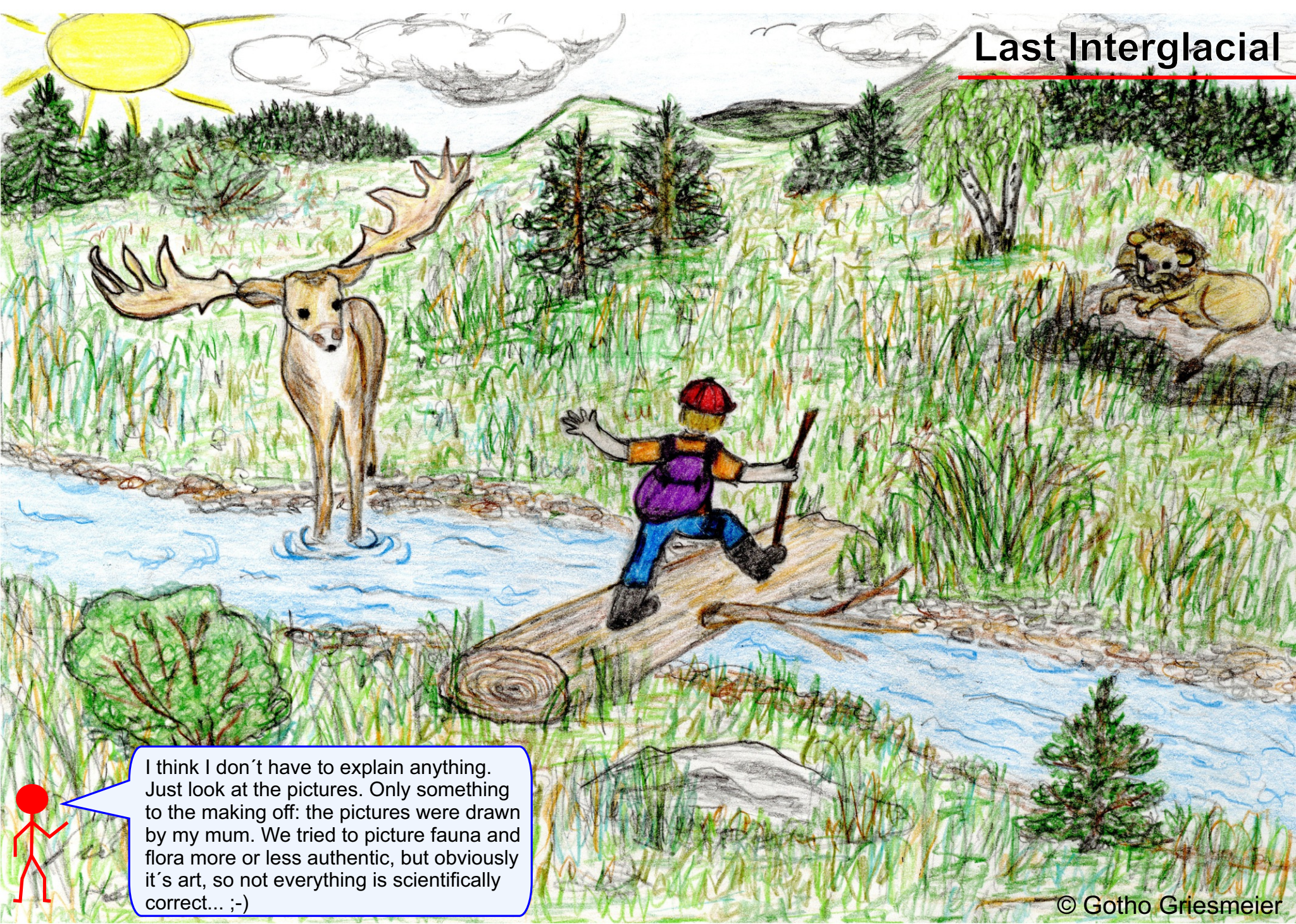
On the map you can see that the Holocene is dominated by fluvial deposits and talus at rock cliffs and unvegetated mountains. Also mass movements play an important role.



Now the map is finished and we learned how the area evolved. In the next few slides I will show you the landscape evolution in pictures to give you an impression how it might have looked like...

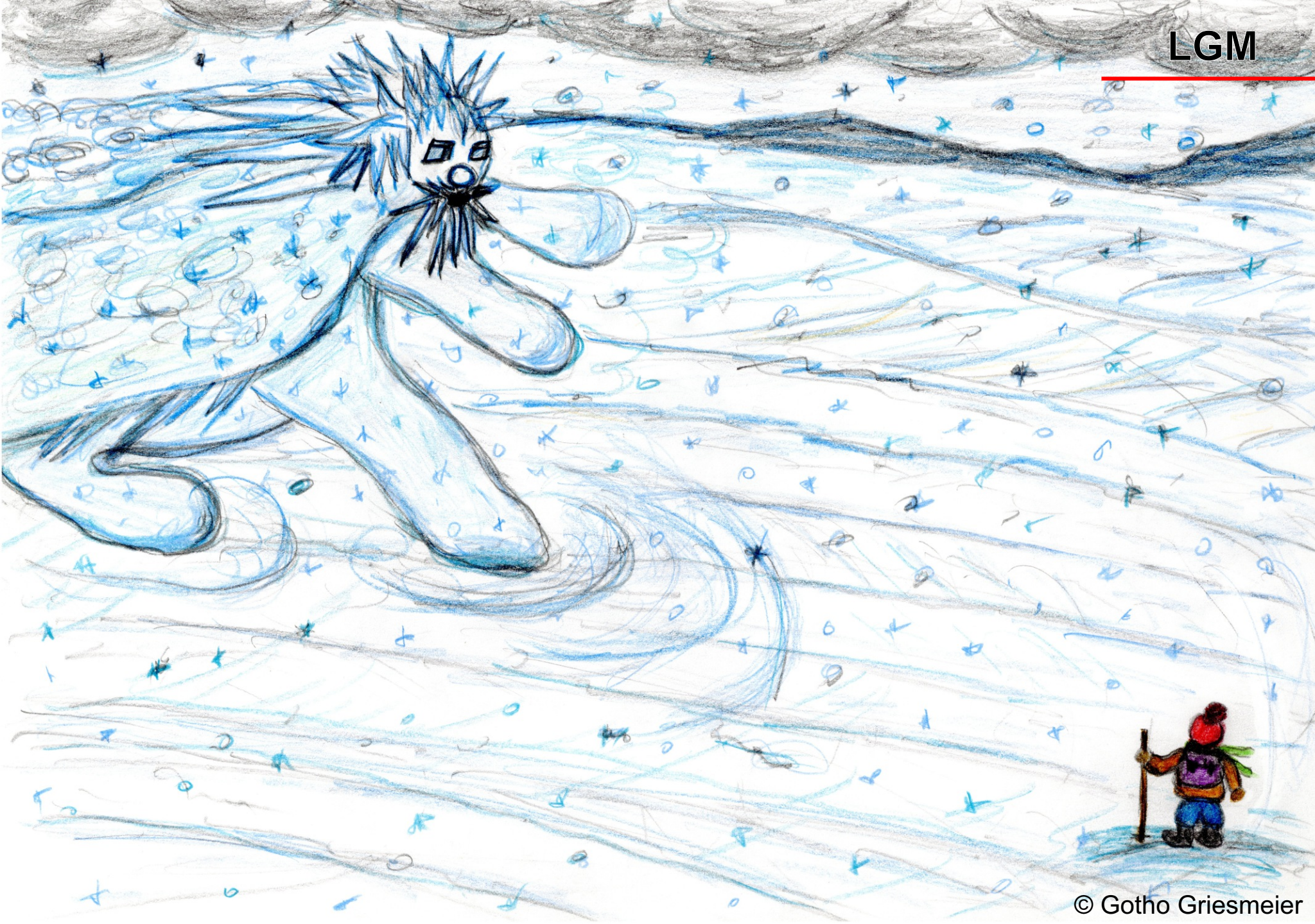


Last Interglacial



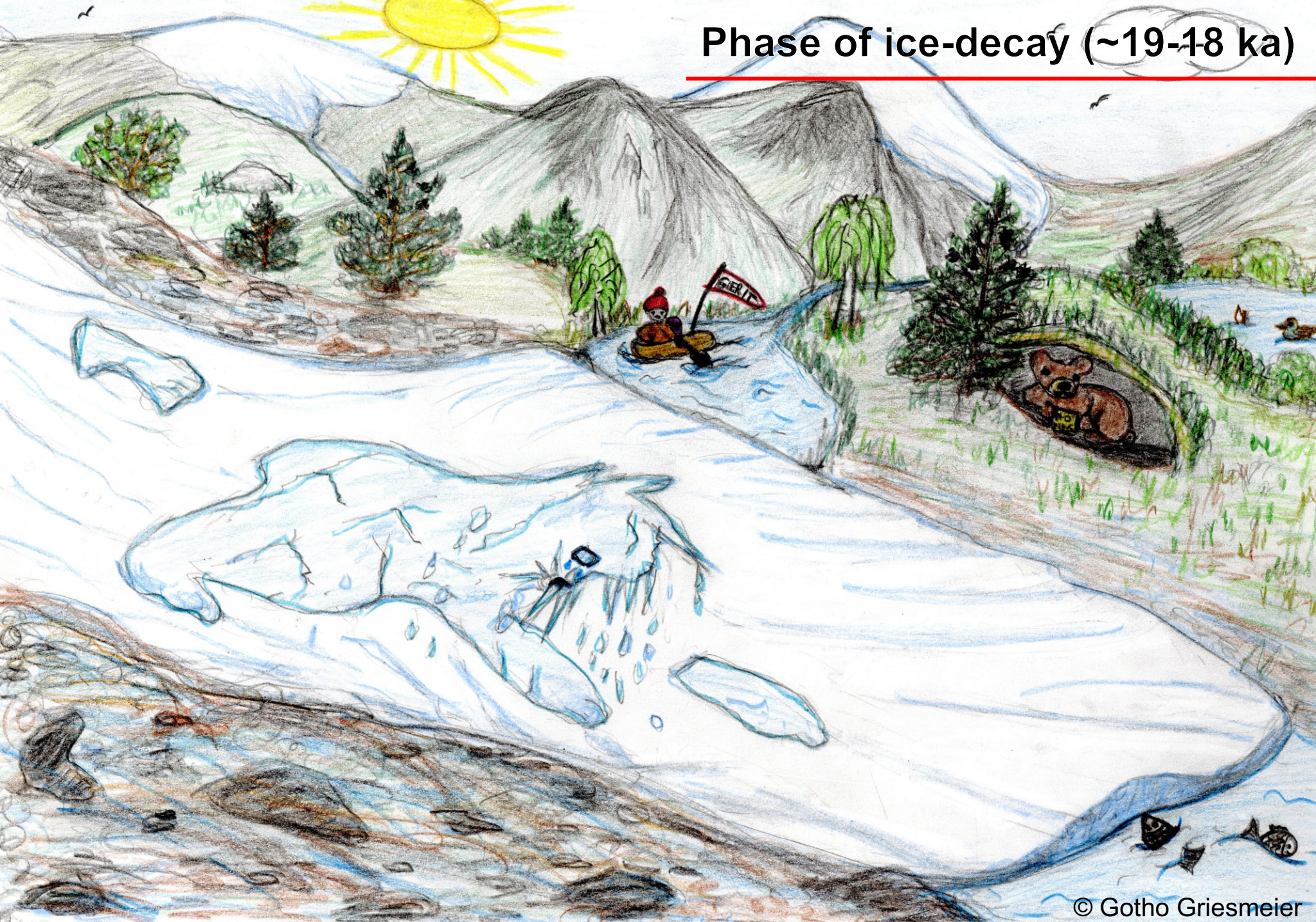
I think I don't have to explain anything. Just look at the pictures. Only something to the making off: the pictures were drawn by my mum. We tried to picture fauna and flora more or less authentic, but obviously it's art, so not everything is scientifically correct... ;-)

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Phase of ice-decay (~19-18 ka)



© Gotho Griesmeier

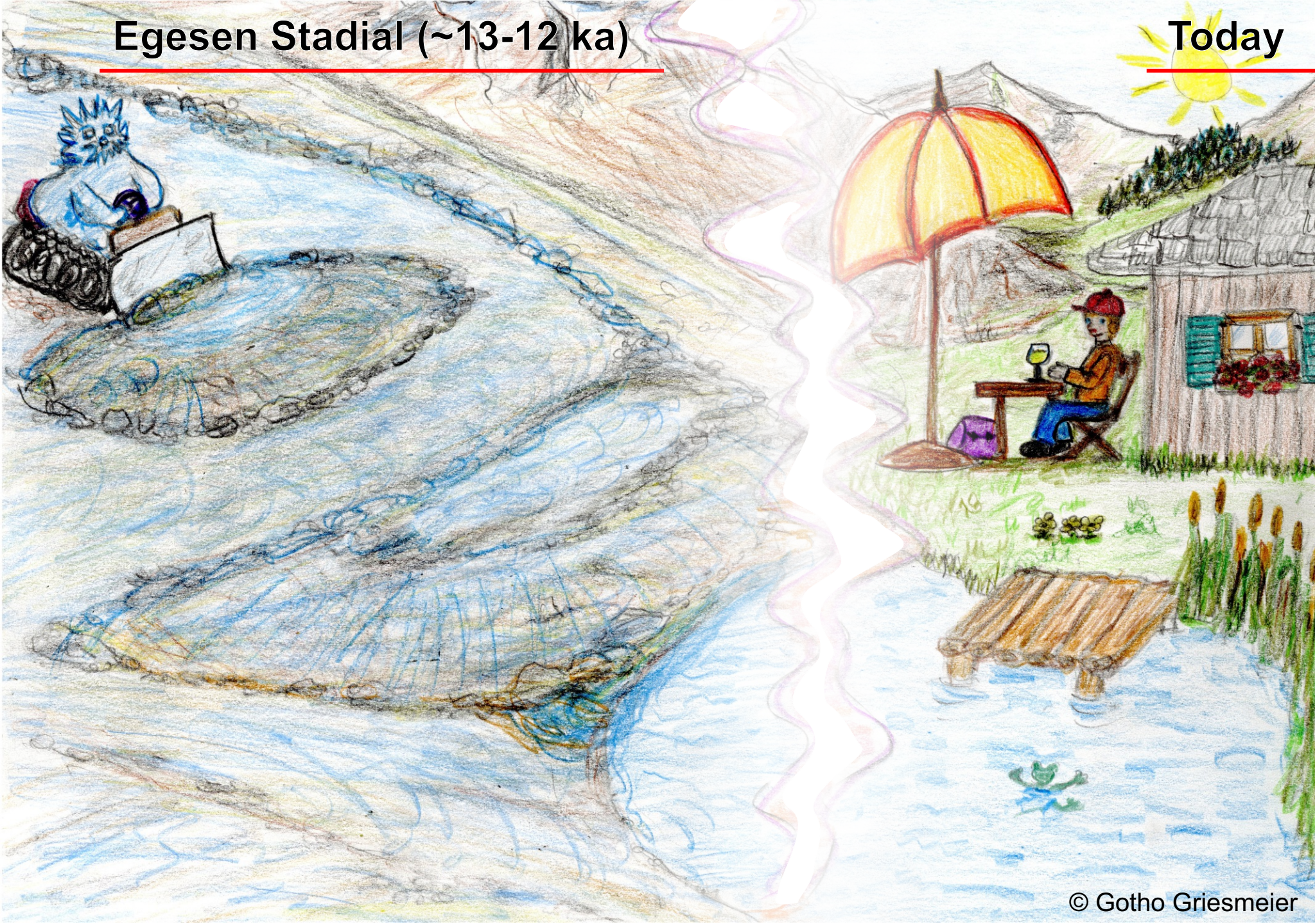
Gschnitz Stadial (~17-16 ka)



© Gotho Griesmeier

Egesen Stadial (~13-12 ka)

Today



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Thank you for clicking through my presentation

