

Ziwundaschg - ^{10}Be dating an Older Dryas cirque glacier moraine in the middle of the Eastern Alps

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Alpine glacier extents during the Oldest Dryas period (>14.7 ka) are still largely unknown. Moraines from that period are comparatively rare and usually attributed to the "Gschnitz Stadial", which marks the alpine glacier reaction to the first part of Heinrich event 1. In many valleys, in the absence of clear geomorphological evidence, estimates for the glacier extent during that period range between large dendritic valley glacier systems with a well defined, albeit unknown glacier end on the one hand and numerous local valley and cirque glaciers on the other hand. In this context well dated local glacier extents may play an important role, as they provide boundary conditions for the altitude of the equilibrium line (an important palaeoclimatic parameter) and thus limit possible speculations about glacier extents in their vicinity.

"Ziwundaschg" is the place name for a cirque in the western Ötztal Mountains near the upper Inn valley and Reschenpass. It is situated more or less in the centre of the Eastern Alps. The cirque floor is at an altitude of about 2000 m and the highest mountains in the back of the cirque are around 2750 m. They were not glacierized during the Little Ice Age, and even a glacierization during the Younger Dryas cold phase was likely limited to a few small ice patches. Further down at the cirque floor, a beautifully developed end moraine with lateral moraines is preserved. ^{10}Be ages from boulders on the moraine cluster around the transition from the Oldest Dryas to the Bølling Interstadial, suggesting moraine stabilization due to the rapid warming at that time. The ELA of the glacier was at about 2200 m a.s.l., roughly 600 - 650 m lower than during the LIA. This value can be taken as representative for the mountain ranges in its vicinity and can form the basis for estimates of glacier extent during the early Lateglacial period in the central Eastern Alps.