



## **10Be depth profile dating in the Swiss Midlands: deposition ages versus erosion**

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During the Pleistocene, glaciers advanced repeatedly from the Alps into the Swiss Midlands. The exact extents and timing are still under debate, even for the last glacial advances. Decalcification depths, for example, increase from west to east in the western Swiss Midlands and have been interpreted to indicate that the Rhone glacier may have been less extensive during the global Last Glacial Maximum (LGM) at 20 ka than assumed so far [1]. In an attempt to provide more quantitative age control, we applied  $^{10}\text{Be}$  depth profile dating [2] on till at five locations in the western part of Switzerland. Two of them lie outside the assumed LGM extent of the Rhone glacier (Niederbuchsiten, St. Urban), two inside the extent of the LGM Rhone glacier (Steinhof, Deisswil) and one profile was taken from the Berne stade (LGM) of the Aare glacier [3]. All surface concentrations are relatively low and indicate massive erosion. Without constrains for age and erosion, depth profile dating yields ages between roughly 15 ka up to more than 1 Ma for the profiles in St. Urban, Niederbuchsiten and Deisswil whereas the profiles in Steinhof and Bern yields only last glacial ages.

The wide range of possible exposure ages illustrates, that independent estimates for erosion would be needed to precisely determine the deposition ages of the investigated tills. However, at this point, we interpret the best model fits to our depth profile concentrations as tentative verification of the assumed LGM extent [3]. The spatial patterns of decalcification depths and soil development in the Swiss Midlands deserves further evaluation.

[1] Bitterli et al. (2011) Geologischer Atlas der Schweiz, Blatt 1108, Swisstopo

[2] Hidy et al. (2010) *Geochem. Geophys. Geosyst.* 11, doi:10.1029/2010GC003084 .

[3] Bini et al. (2009) Switzerland during the Last Glacial Maximum, Swisstopo