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## Was the last glaciation of the Black Forest (southern Germany) synchronous with the Alpine glaciation?

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Chronological evidence from the southern part of the Alps (Monegato et al. 2017) indicates an earlier last glacial maximum of the Alpine glaciers relative to the Eurasian Ice Sheet maximum extent. This asynchronicity is probably due to the expansion of the North American Ice Sheet causing a southward shift of the North Atlantic jet stream and the establishment of a meridional atmospheric circulation over Europe (Luetscher et al. 2015). The advection of humid air masses from the Mediterranean Sea caused the Alpine glaciers to reach their maximum extent prior to the Eurasian ice sheet. Hence, the ice cap of the southern Black Forest must have been in a lee position with respect to the Alpine glaciers. This suggests that the last glacial maximum in the Black Forest was out of phase with the Alps. Since the lack of chronological data from the southern Black Forest prevents this hypothesis to be tested, a glacier chronology is crucially needed. As a first step towards such a framework, glacial landforms in the southern Black Forest are mapped based on both the analysis of high-resolution LiDAR (Light detecting and ranging) data and its derivatives as well as field mapping. Geomorphological mapping of a key site resulted in the identification of 18 ice-marginal positions in a single valley, whereby a significant number of moraines has been mapped for the first time. These findings reinforce the idea of a dynamic Lateglacial in the southern Black Forest interrupted by multiple periods of moraine stabilisation. Additional geomorphological and sedimentological investigations will be carried out to provide a solid base for the application of up-to-date geochronological methods ( $^{10}\text{Be}$  exposure dating of boulders on moraines and optically stimulated luminescence dating) with particular emphasis on supposed last local glacial maximum moraines. Geomorphological, sedimentological and geochronological evidence will then be combined for palaeoglacier modelling. The determination of equilibrium line altitudes will ultimately enable the determination of palaeo-precipitation and -temperature during the last local glacial maximum and the subsequent Lateglacial. This palaeoclimatic reconstruction will be supported by data from the lake Bergsee record (southernmost Black Forest) spanning the 45-14.7 ka period (Duprat-Oualid et al. 2017).

### References

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