

Kamleitner, Sarah^{1,2}; Leger, Tancrede P. M.¹; Ivy-Ochs, Susan³; Henz, Andreas²; Nussbaumer, Samuel U.²; Vieli, Andreas²; Juvet, Guillaume¹

Alpce - ongoing compilation of geochronological & geo(morpho)logical constraints on Alpine paleoglacier evolution

¹*Institute of Earth Surface Dynamics, University of Lausanne, Switzerland;*

²*Department of Geography, University of Zurich, Switzerland;*

³*Laboratory of Ion Beam Physics, ETH Zurich, Switzerland;*

sarah.kamleitner@unil.ch

Enhanced by machine learning techniques, a new generation of glacier evolution models (e.g. the Instructed Glacier Model) facilitates high-order 3D glacier simulations to be run at high resolutions (few hundred of metres), over several tens of millennia, and mountain range scales – at a fraction of the computational cost of conventional ice flow models. Such advances enable to conduct ensemble-type experiments, where a large number of perturbed simulations are produced. Facing a multitude of simulations, a robust framework of empirical data against which to quantitatively score transient glacier model output is indispensable. Despite abundant publications on the topic of paleoglacier reconstruction, the integration of field evidence for model validation in the Alps has thus far largely been restricted to the Last Glacial Maximum (LGM) ice extent and trimline observations. Inspired by work from the (former) British, Fennoscandian, Patagonian, and Greenland ice sheets, we aim on establishing a comprehensive and standardized dataset on paleoglacier fluctuations in the Alps. The so called Alpce database combines published geo(morpho)logical and geochronological markers that restrain the build-up, culmination, and disintegration of the Alpine LGM glaciers as well as subsequent Alpine Lateglacial and Holocene glacier advances. For now, surface exposure and radiocarbon dates are considered. Reliability assessments and paleoglaciological context classifications are undertaken concurrently. Where applicable, the chronological constraints are linked to related geo(morpho)logical features (e.g. moraines) using GIS software. Alpce shall act as empirical basis for future quantitative model-data comparison and is designed as an open-access resource. It hopes to prove useful for both modelling and empirical communities and beyond the scope of model validation.

Session: *Pangeo workshop: Glacial erosion and deposition*

Keywords: *European Alps, Quaternary glaciation, model-data comparison*