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Tackling North-South differences of the Last Glacial Maximum in the Alps

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During the last glacial cycle, temperatures and precipitation patterns were markedly different from today and shifts in the North Atlantic atmospheric circulation distinctly affected moisture delivery to Europe. Sensitive to climate change, glaciers quickly respond to altered precipitation patterns that manifest as spatial and temporal rates of glacier growth. The timing and extent of glacial maxima in the Alps therefore provide basic information on changing moisture sources throughout the last glaciation. The position of LGM Rhine and Ticino/Toce glacier directly North-South of each other with an existing linkage in their accumulation area, qualifies them to study the main controls of spatial and temporal patterns of glacier growth. However, the lack of detailed chronological information currently restricts their use for paleo-climatic reconstruction. This project aims to overcome these limitations by using geomorphological and sedimentological mapping, remote sensing and surface exposure dating to constrain the timing of LGM, recessional/ re-advance stages and ultimate withdrawal from the forelands for both glacier systems. Precisely dated LGM ice margins will help to understand similarities and differences in glacier timing North and South of the Alps and will have the potential to unravel variations in past moisture distribution. Gained results will further serve as point of comparison for the validation of glacier models in collaboration with the Laboratory of Hydraulics, Hydrology and Glaciology (VAW ETHZ).