

Interpreting the landscape in time: the Adige River glacial amphitheatre since the Last Glacial Maximum

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The glacial amphitheatres of the Southern Alps are historically a major source of useful high-resolution climate records of Quaternary glaciations. Their study in terms of landscape evolution puts these landmarks in a time context and allows to establish a chronological sequence of events which controls their formation. The Adige River Glacier Amphitheatre (ARGA) is the smallest of these moraine systems since this glacier was constrained by the much larger Garda Lake Glacial Amphitheatre for most of its duration. We present a detailed map of the morphostratigraphic units composing the ARGA as the first step towards the reconstruction of the evolution of the ARGA system. We could recognise two outermost major moraine arcs aggraded during two positive pulses of the glacier – which we attribute to the Last Glacial Maximum (LGM). Three innermost moraine arcs are smaller and less preserved; they correspond to subsequent fluctuations of the Adige Glacier. Flat areas, filled by gravel sediments from meltwater outwash streams, separate moraine arcs. Between the glacier terminus and the innermost moraine arcs, several flat terraces consisting of sandy to clayey sediments were deposited by a proglacial lake formed in the last phase of retreat. At the final collapse of the Pleistocene glacier fluvial erosion started sectioning Pleistocene deposits. This interpretation substantially confirms previously reported evidence for a two-fold LGM glacial advance in northern Italy.