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Reconstructing LGM paleoglaciers and their ELAs along the southern fringe of the Eastern European Alps

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The reconstruction of paleoglaciers and specifically the calculation of their equilibrium line altitude (ELA) is an important source of quantitative paleoclimatic information in mountainous regions. During the Last Glacial Maximum (LGM), the prealpine massifs in the south-eastern part of the Alpine chain (Venetian Prealps, Carnic Prealps and Julian Prealps) hosted several small valley glaciers and local ice caps that were isolated from the larger ice-streams occupying the major valleys. Because of their small size and independent dynamics these glaciers can be considered as excellent indicators of local climatic conditions. Although this potential has long been recognised and the sediments and landforms related to these glaciations have been mapped in a few areas, a regional perspective on this type of glaciation is still lacking. This is primarily due to the wide range of methods of ELA reconstructions that has been applied historically, which makes a solid comparison between different localities difficult.

Here, we present a detailed re-evaluation of local LGM glaciation in the south-eastern Alps based on a large-scale survey of remote sensing data and targeted field work at selected localities. Recently developed GIS tools were applied for the reconstruction of paleoglacier geometries and ELAs (Pellitero et al. 2015, 2016). The obtained values are used both to discuss regional climatic patterns during the LGM and site-specific topographic factors. A specific focus is set on the Monte Cavallo group, where glacial sediments from the LGM are covering a thick sequence of interstadial lacustrine deposits. A set of new radiocarbon dates from this succession provides a first chronological control on the onset of glacier expansion in this part of the Alpine chain.

References:

Pellitero, R. et al. 2015. A GIS tool for automatic calculation of glacier equilibrium-line altitudes. *Computers & Geosciences* 82: 55-62.

Pellitero, R. et al. 2016. GlaRe, a GIS tool to reconstruct the 3D surface of palaeoglaciers. *Computers & Geosciences* 94: 77-85.

