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Hidden paleosols at high elevation in the Alps (Stolenberg Plateau - NW Italy): evidence for a Lateglacial Nunatak?

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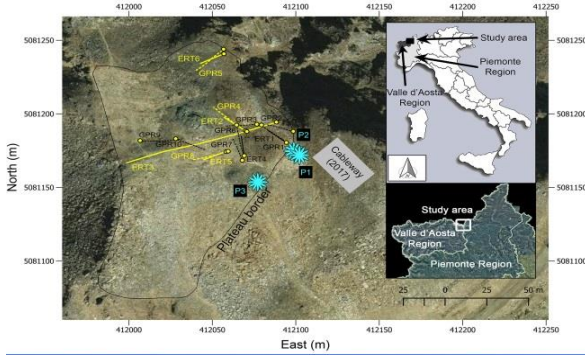
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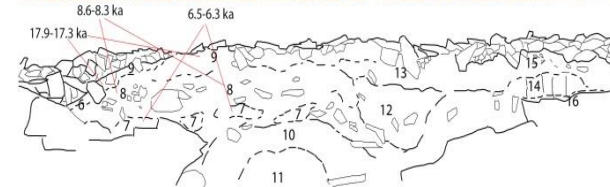
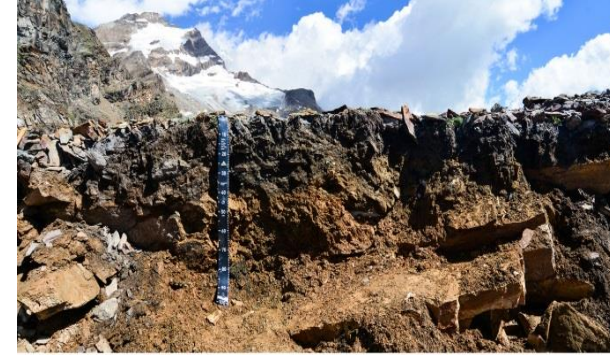
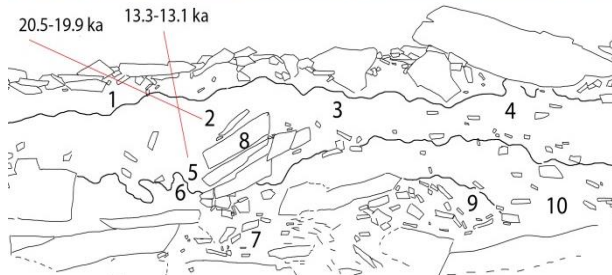
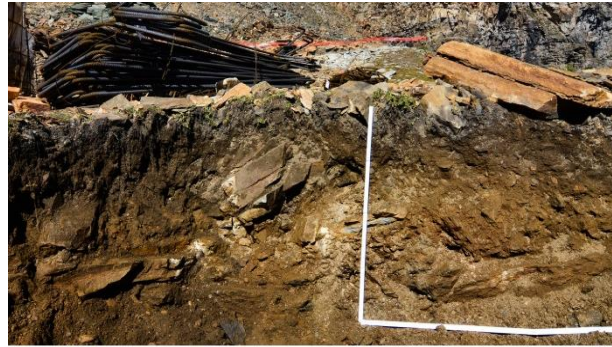


Pintaldi E.¹, D'Amico M.¹, Colombo N.^{1,2,3}, Giardino M.^{2,3}, Freppaz M.^{1,2}
¹University of Turin - DISAFA, ²University of Turin, NATRISK, ³University of Turin – DST.



The study was performed in the periglacial environment of the Stolenberg Plateau (LTER site Istituto Mosso), located at the foot of the southern slope of the Monte Rosa Massif (Western Italian Alps, elevation: ca. 3030 m a.s.l.). The plateau is covered by thick periglacial blockfields and blockstreams, with a plant cover that reaches no more than 3-5% of the surface.

Under the periglacial landforms well-developed soils were observed, characterized by thick (between 30 and 65 cm) umbric horizons, under which discontinuous cambic Bw ones were developed. The organic carbon (C) stocks were surprisingly high (above 5 kg*m⁻²). Geophysical investigations showed that these soils are widespread under the stony cover, with a thickness ranging between 20 and 90 cm.



Radiocarbon dating ranged between 20.5 and 4.4 ka cal. BP, indicating that these soils are paleosols, probably originated during the main warming phases/interstadials occurred between the end of Last Glacial Maximum and the beginning of the Neoglacial.

The results suggest that the Stolenberg Plateau could represent a Lateglacial Alpine Nunatak on which specific pedoclimatic conditions were probably suitable for alpine plant life and pedogenesis already since 21-20 ka BP.