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Weathering processes of selected paleosols from Western Liguria (Northern Italy): micromorphological and mineralogical aspects.

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In the framework of a larger study, focused on the Quaternary evolution of selected areas of the Ligurian Alps (Northern Italy), three representative paleosols have been identified and characterized in detail by routine and mineralogical analyses and by micropedological descriptions of thin sections, in order to identify weathering processes and related environmental changes. The first described paleosol is located at Celle Ligure, along the western Ligurian sea coast, on a marine terrace paleosurface (75 m a.s.l.), where it is possible to observe strongly weathered both marine and continental deposits; the profile is characterized by a thick petroplinthitic horizon, covered by successive fine colluvial layers. Micromorphological features and analytical results allow to identify past weathering processes affecting the bottom horizons, acting in a warm and humid tropical-like climate, distinctive of Quaternary interglacial for this area; on the contrary top horizons show weak evidence of a Holocene younger pedogenesis under humid conditions, with typical swelling features, and a low-intensity mechanical and chemical weathering. The second paleosols, located on the Mànie plateau (320 m a.s.l.) and developed from quartzite parent material, is also comparable to present-day tropical area soils, being characterized by the presence of a deep plinthitic horizon and thick saprolite under the red-brown superficial soil; micromorphological evidences, supported by the analytical approach, confirm the presence of a strong weathering phase, but also suggest a complex origin for the profile, affected by different superimposed processes, acting in different environmental conditions on distinct parent material. The third paleosol has been described at Palo (710 m a.s.l.),

along a gentle slope dipping to the Po river basin; the profile is constituted by two different units, the deeper one, developed from the calcschist parent material show a strong geochemical weathering, while the upper unit is developed from a loess blanket reworked by running water or slope processes (solifluction). Also in this case, the profile is the result of multiple weathering processes, driven by environmental condition and allochthonous material input.