



## A micromorphological, stratigraphical and chronological revision of classic Apennine fringe Paleosols

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The Apennine Margin lies on the southern edge of the sedimentary Po Basin, a wide syntectonic trench bordered by the uplifting Apennine chain.

The margin is evidenced by a series of dissected surfaces, underlain by alluvial fan and floodplain deposits on which thick sequences of well developed complex soils (Stagnic Luvisols (Fragic)) are found. These were mapped by the Soil Service at different scales (1:50.000 and 1:250.000) since the '80s. Since 1993, morphostratigraphic units were focused, the Margin, by the geological maps of Regione Emilia-Romagna (RER) produced at 1:50.000 scale by the Geological, Seismic and Soil Service. These units have been mapped and correlated all along the Apennine fringe as Unconformity Bound Stratigraphic Units (UBSU).

In mapping Quaternary geological formations, the concept of UBSU is becoming a standard. Establishment and correlation of these units make extensive use of soil data, which are part of the features used to define non depositional surfaces and then unconformable boundaries.

The need to correlate the pedological and geological data fostered an integrated approach, with the aim of studying genesis and landscape distribution of the most typical soils in the Apennine Margin and to assess their palaeoenvironmental and chronostatigraphical significance. This investigation has included not only detail analysis of

representative observations, but also the complete re-evaluation of the RER soil data base, where about 2000 soil observations are stored for this area.

The highly complex morphological properties and horizon sequences of these soils prompted extensive use of micromorphology to clarify policyclical pedogeneses and relations between horizons.

Micromorphological investigations point out that, often, adjacent horizons do not show any clear genetic relationship suggesting instead that they correspond to distinct sedimentary layer. Very complex morphological assemblages are evidenced as originated by overprinting of different processes in successive moments. It then appears that these thick pedocomplex have an accretionary nature, and that part of the morphological properties observed result from post-burial processes.

In order to overtake inconsistencies in the palaeoenvironmental and chronostratigraphical significance, Optically Stimulated Luminescence (OSL) was used to obtain absolute dates. The results appear to indicate fairly young ages, ranging from 135 to 38 ky BP. Previous chronological hypotheses about typical Margin soils had postulated older ages, back to a maximum of 700 ky BP.