



Weathering and paleosols on the high plain of Castelseprio (Northern Italy): micromorphological approach.

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The high plain of Castelseprio (Northern Italy) fits in the Middle Olona Valley, located between the amphitheater of Verbano lake and the amphitheater of Lario lake. The entire area has already been characterized from the geological and stratigraphic point of view (Zuccoli, 1997) and in the present work the paleopedological and micromorphological aspects are presented.

Twenty-five thin sections representative of different stratigraphic units have been described by means of the micromorphological approach carried out according to Stoops (2003). The recognition of specific features allowed to identify the processes that took place during the formation of the studied pedogenetic bodies and the factors that they controlled.

In this light a palaeoenvironmental reconstruction to large scale is proposed, since the thin sections studied in the present work, come from punctual samplings within the different stratigraphic units, and not from complete soil profiles.

Indeed, the evidence of several climatic phases, is testified in the different units, consisting, for example, of the different generations of textural and crystalline pedofeatures, sometimes juxtaposed.

In particular, the crystalline pedofeatures, arising from the carbonate translocation process, show that the pedogenetic bodies have crossed a first period characterized by a good availability of water. They have been identified in the form of macro-crystalline calcite coatings, equigranular microcrystalline calcite infillings, inequigranular calcite infillings and inequigranular calcite nodules.

Then the pedogenetic bodies were affected by different stages of alteration controlled by climate, represented by textural pedofeatures deriving from clay translocation process and showing different characteristics related to several different environmental conditions:

- The nonlaminated limpid yellow clay coatings and corresponding infillings;
- The nonlaminated dusty yellow clay coatings and corresponding infillings;
- The laminated limpid yellow clay coatings and infillings
- The laminated dusty yellow clay coatings and the infillings,

Moreover, the described textural pedofeatures are often organized as layered coatings, with alternating dusty and limpid coatings, emphasizing the fluctuating environmental conditions between stable climatic periods, mainly wet, and climatic deterioration periods.

Finally, the presence of fragmented clay coatings, denotes also the presence of reworking of the groundmass, by bioturbation and pedoturbation events.

In conclusion, the micromorphological approach allowed to tentatively reconstruct the chronology of the main pedogenetic phases, and showed how the Quaternary history of this territory has been influenced by pedogenesis.

In order to obtain a more accurate and detailed palaeoenvironmental reconstruction of the study area the full micromorphological sampling of the more representative pedosedimentary sequences is now in progress.