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Micromorphological analysis of paleosols as a tool for identification of climate change

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Summary

Paleosols are ancient soils formed in the landscapes of the past. They have preserved pedogenetic features that reflect the conditions of their formation and are therefore an excellent terrestrial archive for paleoenvironmental and paleoclimate reconstruction. Micromorphological analysis of the undisturbed samples of the soil gives information about the intensity and/or duration of soil-forming processes. Micromorphology contributes to the understanding of soil development that is directly affected by past climate conditions and environmental change. Moreover, it enables differentiation of the lithogenic and pedogenic origin of certain constituents and even traces eroded paleosols. The specific morphologies of the investigated soils indicate the climate dynamics records preserved within different Quaternary sediment-paleosol sequences in Croatia. The combination of micromorphological, chemical, physical and mineralogical characteristics of paleosols will enable the qualitative and quantitative estimation of the paleotemperatures and paleoprecipitation in the continental and coastal Croatia within the Late Pleistocene and Holocene time frame. The correlation of climate change intensities in continental and Mediterranean climates throughout the past will provide parameters for a proposal of the prognostic model of climate dynamics effect on the pedogenesis of these two regions.

Key words: micromorphology, paleosol, Quaternary, paleoclimate reconstruction, Croatia

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