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EVIDENCE OF ABRUPT CLIMATE CHANGE PRESERVED WITHIN QUATERNARY SEDIMENTOLOGICAL SEQUENCES IN CROATIA – METHODOLOGICAL APPROACH

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Aiming at identifying and describing the evidence of Late Quaternary abrupt climate changes, preserved within terrestrial sedimentary records, this research is focused on the investigation of four different pedo-sedimentary complexes in Croatia. Within the Pannonian region (continental climate), the research will be conducted on the Zmajevac loess-paleosol sequence and several paleosols developed within the Đurđevac Sands. The other two sites are located in the Croatian Dinaric region (Mediterranean climate) where fluvioglacial sediments of Privlaka and karst lacustrine sediments of the Vrgoračko polje will be investigated. The planned methodology implies the utilization of geophysical methods, drilling and sampling, remote sensing techniques to analyse dune morphologies, as well as conducting various laboratory analyses to determine textural, geochemical, paleobotanical, micromorphological, mineralogical and geochronological properties of the marker horizons. The marker horizons that will be studied are considered those that indicate the change in climatic conditions, e.g. formed by cumulization, synchronously to the vegetation regression upward on the top of well-developed paleosols, as markers of progressive aridization. The locations for sampling were carefully selected based on previous field experience and supported by the results of geoelectrical sounding and drilling campaigns that delimited the lateral and vertical extent of the marker horizons. The mineralogical and chemical properties of a few marker horizons have already been described through previous research. The age of each marker horizon will be estimated using radiocarbon dating, optically stimulated luminescence (OSL) dating or existing geochronological information. Detailed micromorphological analysis of the thin sections, together with geochemical indicators, will provide information about the pedogenetic development of the paleosols and will ultimately be translated into dynamics of climate change during the Late Quaternary.

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