Abstract

The combination of sedimentological, geochemical, geophysical and palaeobiological methods usually allows for a more or less complex reconstruction of the development of the environmental environment captured in pedo-sedimentary records. In the case of Holocene records, this portfolio can be extended by geoarchaeological methods. The aim of the thesis is to provide answers to questions of the use of pedogeochemical and geoarchaeological methods in a research of buried soils and to try to determine how big was a role of climate or human in the formation of pedo-sedimentary record. Multidisciplinary analysis carried out in five localities of the Czech Republic (Kly, Brno-Přízřenice, Česká Bělá), Slovakia (Bíňa-Čata) and Poland (Sowin) provided a lot of knowledge about the development of soils and the relationship between human, climate and landscape from the Upper Pleistocene (MIS 3) to the Middle Ages.

The detection of climatic changes within the glacial palaeosols of the Bíňa-Čata locality was concentrated on the period from the early MIS 3 to the turn of MIS 3 to MIS 2. The methods used lead to the correlation of the soils with the Oerel, Glinde and Denekamp interstadials, as well as the distinction between changes in temperature and humidity characteristics at the time of soil formation and after. The alluvial bands from the archaeological sites of Sowin and Kly are an interesting example of a climatically conditioned texture element in the locality provably anthropogenically affected. Their origin is conditioned by increased precipitation sums in the period before loess deposition in the late Glacial period or in the Holocene (Sowin, formation of bands in two phases) and in the Subboreal (Kly, formation in one phase); anthropogenic influence on their formation was excluded. Based on a comprehensive pedogeochemical and geoarchaeological analysis, naturally formed catena was determined in Brno-Přízřenice, made of Phaeozem and Chernozem with intensive anthropogenic influence during the Neolithic to the Bronze Age. There is evidence of anthropogenic influence by fertilization (Cox, Ca, P, K and Mg), especially in the Chernozem, the less hydromorphically influenced profile. The use of soil for growing crops (tillage) is also evidenced by other methods. In the case of medieval alluvial sediments in the Březina floodplain near Česká Bělá, pedogeochemical analysis clearly showed an increased amount of organic matter and an increase in Pb, Cd and Zn concentrations, thereby identifying their origin in general - a material produced by polymetallic ore mining and processing. Fluvial transport prior to redeposition (sorting, biotite crystal orientation) and the original position probably in the sedimentation tank (the amount of microcharcoals and the amount of unfragmented diatomite indicating the stagnant water environment) was revealed by micromorphological analysis.

The methods applied have proved to be suitable for the detection of climatic changes archived in buried glacial and Holocene soils, as well as for the detection and interpretation of climatic or anthropogenic influence on Holocene soils and sediments.