

Landforms, sediments, soils and palaeosols as records of present and former environmental conditions and human-environment interactions

Relief, sediments, soils and palaeosols represent valuable records of present and past environmental conditions. Moreover, they reflect human-environment interactions - in both directions -, as on the one hand they record what kinds of environments existed during different periods and thus influenced human communities, and on the other hand they document, in which way human communities influenced their environments. Former human activities may be documented e.g. in ridge and furrow systems, agricultural terraces, burial mounds and charcoal kiln sites. In most cases, the anthropogenic influence also altered the soil properties at such sites. They often differ from the surrounding landscapes with respect to soil chemical or soil physical properties.

Successions of sediments and palaeosols – the latter having developed in the sediments during phases of landscape stability and thus sedimentary hiatuses - document environmental changes over time. However, correct interpretation of palaeosols is not an easy task. Profound knowledge on causal relationships between natural / anthropogenic factors and resulting soil processes, soil properties and soil features are needed for appropriate interpretation of palaeosols. The required knowledge on causal relationships can be derived from modern analogues, i.e., from modern soils that have developed under a known combination of natural / anthropogenic factors. Similarly, the time that is required to reach a certain stage of soil formation can be assessed by analysing soils that have formed over known periods in time. This knowledge is essential for estimating the duration of land surface stability based on the degree of pedogenesis in palaeosols of a sediment-palaeosol succession.

In this Special Issue, we welcome contributions on all aspects mentioned above:

- a) contributions focusing on different anthropogenic relief features, at various scales and in different ecosystems in order to compare the legacy effects of different land use types and to make connections between small-scale anthropogenic relief features and their surrounding environment,
- b) contributions that approach the ecological significance of small-scale anthropogenic relief features by (1) mapping their occurrence, e.g., using remote sensing data, digital elevation models, or field surveys (2) analysing their specific soil and sedimentological characteristics and their effects on plants and ecosystems, (3) exploring ecological interactions and interdependencies between anthropogenic relief features and their surrounding landscape, (4) studying ecological succession on sites after previous human influence,
- c) contributions on the interpretation of palaeosols, both with respect to natural palaeoenvironmental conditions and human activities reflected in the palaeosols,
- d) studies on causal relationships between environmental / anthropogenic factors and resulting soil-forming processes, soil mineralogical and -chemical composition and soil-physical characteristics, obtained from analysing modern soils in well-defined environments.

The Special Issue will include contributions from:

- 1) *Workshop of the INQUA Focus Group QUASAP (Quaternary Soils and Palaeosols): “The Route of Humboldt - Rates of pedogenesis in the dynamic landscapes of Central Mexico”, 6-13 December 2016 in Mexico City (contact: Maria Bronnikova and Daniela Sauer),*
- 2) *EGU session SSS3.4 “Geomorphological and (palaeo-) pedological records of natural environmental factors and human impact”, 28 April 2017 in Vienna (contact: Florian Hirsch and Daniela Sauer),*
- 3) *Meeting of the German WG Geoarcheology, 12-13 May in Erlangen, Germany (contact: Bernhard Lucke).*