Geophysical Research Abstracts
Vol. 18, EGU2016-18074-1, 2016
EGU General Assembly 2016

Soil mapping and modelling for evaluation of the effects of historical and present-day soil erosion

Anna Smetanova (1) and Piotr Szwarczewski (2)

(1) LISAH, INRA, Montpellier, France (anna.smetanova@supagro.inra.fr), (2) University of Warsaw, Faculty of Geography and Regional Studies, Warsaw, Poland

The loess hilly lands in Danube Lowland are characterized by patchy soil-scape. The soil erosion processes uncover the subsurface, bright loess horizon, while non-eroded and colluvial soils are of the dark colour, in the chernozem area. With the modernisation of agriculture since the 1950's and in the process of collectivization, when small fields were merged into bigger, the soil degradation progressed. However, the analysis of historical sources and sediment archives showed the proofs of historical soil erosion. The objective of this study is to map the soil erosion patterns in connection of both pre- and post-collectivization landscape and to understand the accordingly developed soil erosion patterns. The combined methods of soil mapping and soil erosion modelling were applied in the part of the Trnavska pahorkatina Hilly Land in Danube Lowland. The detailed soil mapping in a zero-order catchment (0.28 km^2) uncovered the removal of surface soil horizon of 0.6m or more, while the colluvial soils were about 1.1m deep. The soil properties and dating helped to describe the original soil profile in the valley bottom, and reconstruct the history of soil erosion in the catchment. The soil erosion model was applied using the reconstructed land use patterns in order to understand the effect of recent and historical soil erosion in the lowland landscape.
This work was supported by the Slovak Research and Development Agency under the contract ESF-EC-0006-07 and APVV-0625-11; Anna Smetanová has received the support of the AgreenSkills fellowship (under grant agreement n°267196).