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Elaboration of a framework for the compilation of countrywide, digital maps for the satisfaction of recent demands on spatial, soil related information in Hungary

László Pásztor (1), Endre Dobos (2), József Szabó (1), Zsófia Bakacsi (1), and Annamária Laborczi (1)

(1) Institute for Soil Sciences and Agricultural Chemistry, Centre for Agricultural Research, Hungarian Academy of Sciences, Department of Environmental Informatics, Budapest, Hungary (pasztor@rissac.hu), (2) University of Miskolc, Faculty of Earth Science and Engineering, Department of Physical Geography and Environmental Sciences, Miskolc, Hungary

There is a heap of evidences that demands on soil related information have been significant worldwide and it is still increasing. Soil maps were typically used for long time to satisfy these demands. By the spread of GI technology, spatial soil information systems (SSIS) and digital soil mapping (DSM) took the role of traditional soil maps. Due to the relatively high costs of data collection, new conventional soil surveys and inventories are getting less and less frequent, which fact valorises legacy soil information and the systems which are serving the their digitally processed version. The existing data contain a wealth of information that can be exploited by proper methodology. Not only the degree of current needs for soil information has changed but also its nature. Traditionally the agricultural functions of soils were focussed on, which was also reflected in the methodology of data collection and mapping. Recently the multifunctionality of soils is getting to gain more and more ground; consequently information related to additional functions of soils becomes identically important. The new types of information requirements however cannot be fulfilled generally with new data collections at least not on such a level as it was done in the frame of traditional soil surveys. Soil monitoring systems have been established for the collection of recent information on the various elements of the DPSIR (Driving Forces-Pressures-State-Impacts-Responses) framework, but the primary goal of these systems has not been mapping by all means. And definitely this is the case concerning the two recently working Hungarian soil monitoring systems.

In Hungary, presently soil data requirements are fulfilled with the recently available datasets either by their direct usage or after certain specific and generally fortuitous, thematic and/or spatial inference. Due to the more and more frequently emerging discrepancies between the available and the expected data, there might be notable imperfection as for the accuracy and reliability of the delivered products. Since, similarly to the great majority of the world, large-scale, comprehensive new surveys cannot be expected in the near future, the actually available legacy data should be relied on.

With a recently started project we would like to significantly extend the potential, how countrywide soil information requirements could be satisfied. In the frame of our project we plan the execution of spatial and thematic data mining of significant amount of soil related information available in the form of legacy soil data as well as digital databases and spatial soil information systems. In the course of the analyses we will lean on auxiliary, spatial data themes related to environmental elements. Based on the established relationships we will convert and integrate the specific data sets for the regionalization of the various, derived soil parameters. By the aid of GIS and geostatistical tools we will carry out the spatial extension of certain pedological variables featuring the (including degradation) state, processes or functions of soils. We plan to compile digital soil maps which fulfil optimally the national and international demands from points of view of thematic, spatial and temporal accuracy. The targeted spatial resolution of the proposed countrywide, digital, thematic soil property and function maps is at least 1:50.000 (approx. 50-100 meter raster).

Our stressful objective is the definite solution of the regionalization of the information collected in the frame of two recent, contemporary, national, systematic soil data collection (not designed for mapping purpose) on the recent state of soils, in order to produce countrywide maps for the spatial inventory of certain soil properties, processes and functions with sufficient accuracy and reliability.