Geophysical Research Abstracts
Vol. 17, EGU2015-10118, 2015
EGU General Assembly 2015

Compilation of functional soil maps for the support of spatial planning and land management in Hungary

László Pásztor (1), Annamária Laborczi (1), Katalin Takács (1), Gábor Szatmári (2), Nándor Fodor (3), Gábor Illés (4), Zsófia Bakacsi (1), and József Szabó (1)

(1) Institute for Soil Science and Agricultural Chemistry, Centre for Agricultural Research, Hungarian Academy of Sciences, Department of Environmental Informatics, Budapest, Hungary (pasztor@rissac.hu), (2) University of Szeged, Department of Physical Geography and Geoinformatics, (3) Agricultural Institute, Centre for Agricultural Research, Hungarian Academy of Sciences , (4) National Agricultural Research and Innovation Centre, Forest Research Institute

The main objective of the DOSoReMI.hu (Digital, Optimized, Soil Related Maps and Information in Hungary) project is to significantly extend the potential, how demands on spatial soil related information could be satisfied in Hungary. Although a great amount of soil information is available due to former mappings and surveys, there are more and more frequently emerging discrepancies between the available and the expected data. The gaps are planned to be filled with optimized DSM products heavily based on legacy soil data.
Delineation of Areas with Excellent Productivity in the framework of the National Regional Development Plan or delimitation of Areas with Natural Constraints in Hungary according to the common European biophysical criteria are primary issues in national level spatial planning. Impact assessment of the forecasted climate change and the analysis of the possibilities of the adaptation in the agriculture and forestry can be supported by scenario based land management modelling, whose results can be also incorporated in spatial planning. All these challenges require adequate, preferably timely and spatially detailed knowledge of the soil cover. For the satisfaction of these demands the soil conditions of Hungary have been digitally mapped based on the most detailed, available recent and legacy soil data, applying proper DSM techniques.
Various soil related information were mapped in three distinct approaches: (i) basic soil properties determining agri-environmental conditions (e.g.: soil type according to the Hungarian genetic classification, rootable depth, sand, silt and clay content by soil layers, pH, OM and carbonate content for the plough layer); (ii) biophysical criteria of natural handicaps (e.g.: poor drainage, unfavourable texture and stoniness, shallow rooting depth, poor chemical properties and soil moisture balance) defined by common European system and (iii) agro-meteorologically modelled yield values for different crops, meteorological and management scenarios. The applied method(s) for the spatial inference of specific themes was/were suitably selected: regression and classification trees, random forests and support vector machines for categorical data; regression kriging and cubist methods for quantitative data; and indicator kriging for probabilistic management of criterion information.
Our paper will present the mapping processes themselves, the resulted national maps and some conclusions drawn from the experiences.

Acknowledgement:
Our work was supported by the Hungarian National Scientific Research Foundation (OTKA, Grant No. K105167).