

EGU2020-9645

<https://doi.org/10.5194/egusphere-egu2020-9645>

EGU General Assembly 2020

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



Functional applications of primary soil property maps provided by DOSoReMi.hu

László Pásztor¹, Annamária Laborczi¹, Brigitta Szabó¹, Nándor Fodor², Sándor Koós¹, and Gábor Szatmári¹

¹Institute for Soil Science and Agricultural Chemistry, Centre for Agricultural Research, Department of Soil Mapping and Environmental Informatics, Budapest, Hungary (pasztor@rissac.hu)

²Agricultural Institute, Centre for Agricultural Research, Crop Production Department, Martonvásár, Hungary

The main objective of DOSoReMi.hu (Digital, Optimized, Soil Related Maps and Information in Hungary) initiative has been to broaden the possibilities, how demands on spatial soil related information could be satisfied in Hungary, how the gaps between the available and the expected could be filled with optimized digital soil (related) maps. During our activities we have significantly extended the potential, how goal-oriented, map-based soil information could be created to fulfill the requirements. Primary and specific soil property, soil type and certain tentative functional soil maps were compiled. The set of the applied digital soil mapping techniques has been gradually broadened incorporating and eventually integrating geostatistical, machine learning and GIS tools. Soil property maps have been compiled partly according to GlobalSoilMap.net specifications, partly by slightly or more strictly changing some of their predefined parameters (depth intervals, pixel size, property etc.) according to the specific demands on the final products. The nationwide, thematic digital soil maps compiled in the frame and spin-off of our research have been utilized in a number of ways.

Soil hydraulic properties (saturated hydraulic conductivity, wilting point, field capacity, saturated water content) were mapped applying generalized pedotransfer functions on available, primary soil property maps supplemented with further environmental co-variables, which were also used in the elaboration of the specific PTF.

Spatial assessment of certain provisioning and regulating soil functions and services was carried out by the involvement of soil property maps in digital process/crop models, which properly simulate the soil-plant-water environment conditioned by various factors based on actual, predicted or presumed data. Specific outputs of the modelled processes provided adequate information on functional behavior of soils.

Programs or studies dedicated to the designation of areas suitable for irrigation; risk modelling of inland excess water hazard; mapping of potential habitats; spatial assessment and mapping of ecosystem services were heavily relied on the novel type spatial soil information. The approaches sometimes required certain modifications of the standard GSM products due to various reasons.

The paper will present various national functional applications of primary soil property maps provided by DOSoReMI.hu.

Acknowledgment: Our research was supported by the Hungarian National Research, Development and Innovation Office (NRDI; Grant No: KH126725).