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DOSoReMI.hu Digital, Optimized, Soil Related Maps and Information in Hungary

Results of a project for functional, DSM based renewal of Hungary's National Soil Spatial Data Infrastructure



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OUTLINE



Demand obsessment	Evaluation, wooling, referction	Target variable
Ibenatic feeture extraction	Thematic sall maps Souther sall	
Spotial Statum extraction	sol databases	Auxillary environmental covariables
Method susessment	5-1 (S, C, D, P, P, A, N) Accuracy realistics	Optimized
near tainet) and taile and and taile and taile and and taile and and taile and and taile and and taile and taile and and taile and t	Fine tuning of model obments	of target variable





- Hungary's National Soil Spatial Data Infrastructure
- Framework of the DOSoReMi.hu

project

- Results of the DOSoReMi.hu project
- Beyond primary soil property maps
- Conclusion





Hungary's National Soil Spatial Data Infrastructure (NSSDI)



* Spatial soil information

sources



How legacy observation can be supplemented with optimally selected new samplings was presented in more details by Gábor SZATMÁRI yesterday



Hungary's National Soil Spatial Data Inirastructure (NSSDI)

Spatial soil information "offer"







Spatial soil information demand







Hungary's National Soil Spatial Data Infrastructure (NSSDI)

Compromising spatial soil information offer and demand



Feasibility of the DOSoReMi.hu project



reference soil data sources description: layers; origin: survey, monitoring, (collection)

How legacy observation can be supplemented with optimally selected new samplings was presented in more details by Gábor SZATMÁRI yesterday

Framework of the DOSoReMi.hu project







Framework of the DOSoReMi.hu project

Target variable								
Prima	ary soil pro	perty	Soil class					
	lay	ver		layer				
whole profile	GSM.net standard	specific depth interval	whole profile	GSM.net standard	specific depth interval			
standar	d or unique	feature	standard or unique feature					
Secon	dary soil pro	operty	Secondary soil class					
whole profile	lay	ver		layer				
	GSM.net standard	specific depth interval	whole profile	GSM.net standard	specific depth interval			
standar	d or unique	feature	standard or unique feature					
Soil functions, services								





Framework of the **DOSoReMi.hu project**



Selected, optimized result



Accuracy, reliability, applicability assessment

<u>o</u> n s

Improved, value added maps





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Products according to and differing from GSM.net specifications

As it was presented in more details by Annamária LABORCZI in the former presentation





Laborczi, Takács, Szatmári, Pásztor: Mapping of topsoil texture in Hungary using classification trees JOURNAL OF MAPS first online (2016)

spatial resolution: 100 m		profile	topsoil-subsoil stratification		uniform layers		layers used in specific meteorological model			GSM.net standard layers							
			topsoil	subsoil	0-30 cm	30-60 cm	60-90 cm	0-20 cm	20-50 cm	50-100 cm	0-5 cm	5-15 cm	15-30 cm	30-60 cm	60-100 cm	100-200 cm	
/ soil properties	particle size fractions [%]	clay															
		silt															
		sand															
	texture class (Hungarian)																
	texture class (USDA)	ure class (USDA)															
	available water conten	t															
	bulk density																
	organic matter content																
nar	рН																
orin	carbonate content																
	genetic soil type																
	rooting depth																

		6			J	J	J	ļ	J	J	J	ļ	J	ļ	J	J	
	cumulative thickness of sand layers of the 100 (r sand and loamy															
S	probability of the occu	rrence of vertic															
il map	properties within the 1 surface	00 cm soil															
cific so	maximum pH within th surface	e 150 cm of soil															
spe	average salt content in	the profile															
target	***																
			a	available			not	t relev	ant		be scł	nedu	led				



Disaggregated soil bonitation map





Pásztor, Laborczi, Takács, Szatmári, Bakacsi, Szabó: Variations for the Implementation of SCORPAN's "S"; In: Gan-Lin Zhang, Dick Brus, Feng Liu, Xiao-Dong Song, Philippe Lagacherie (eds.) Digital Soil Mapping Across Paradigms, Scales and Boundaries. Singapore: Springer-Verlag Singapore, 2016. pp. 331-342.



Disaggregated soil type map





Pásztor, Laborczi, Takács, Szatmári, Dobos, Illés, Bakacsi, Szabó: Compilation of novel and renewed, goal oriented digital soil maps using geostatistical and data mining tools. HUNGARIAN GEOGRAPHICAL BULLETIN 64:(1) pp. 49-64. (2015)



Unified, harmonized (agriculture-forestry), national soil type map











To be published as Chapter 9 in Soil Mapping and Process Modeling for Sustainable Land Use Management edited by Paulo Pereira, Eric Brevik, Miriam Munoz-Rojas, and Bradley Miller



Target-specific soil property maps



Will be presented in more details by Katalin TAKÁCS on Friday Areas Facing Natural Constraints defined by common European biophysical criteria





To be published as Chapter 9 in Soil Mapping and Process Modeling for Sustainable Land Use Management edited by Paulo Pereira, Eric Brevik, Miriam Munoz-Rojas, and Bradley Miller



Spatialization of empirical formulas



Soil related maps





Submitted to Journal of Maps



Soil related maps





Submitted to Natural Hazards and Earth System Sciences



Spatialization of model results





To be published as Chapter 9 in Soil Mapping and Process Modeling for Sustainable Land Use Management edited by Paulo Pereira, Eric Brevik, Miriam Munoz-Rojas, and Bradley Miller

Spatialization of model results: soil function map





To be published as Chapter 9 in Soil Mapping and Process Modeling for Sustainable Land Use Management edited by Paulo Pereira, Eric Brevik, Miriam Munoz-Rojas, and Bradley Miller



- Soundly elaborated framework (data background, workflow, optimization, experience, ...)
- Wide range of products
- Fulfilment of numerous, various data demands nevertheless
- Huge work is still ahead
- Missing GSM.net standard products
- Challenge of direct mapping of soil functions and



services



THANK YOU FOR YOUR ATTENTION









Acknowledgement

Digital Soil Mapping of large areas

Hungary is located between the 44° and 48° North latitudes and the 16° and 22° East longitudes **on a territory of 93,030 km**²

Most of the country consists of plains and mountains of medium height; the highest point is 1,014 meters. The Balaton is the largest lake in Central Europe.





