



A WRB based harmonized digital soil map of the Carpathian-basin

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There is an increasing need for harmonized, cross-border soil datasets for several applications. The internationally accepted common nomenclature for soil classification is the WRB. Therefore the most typical way to derive international soil datasets is to translate the national systems into WRB. However, this approach necessarily neglects important details, such as none recorded or generalized soil information of the input soil datasets, so the output WRB class is just an expert knowledge based assumption. The geometry of the input datasets are often directly imported, taken as it is in the national datasets, regardless of the differences of the class definitions between the two systems. So the border lines are necessarily different from the ones the translated maps should use. Due to these potential problems, no accurate harmonized maps can be compiled using the traditional approaches.

An alternative approach is to use derived property information required for the classification process and build a digital soil mapping based approach and a quantitative classification methodology to spatially define the different soil classes. Of course these methods require unbiased covariates like, DEM and satellite data, and several harmonized input calibration datasets.

The e-SOTER project developed a novel approach to develop and present categorical information this way, using digital soil mapping tools, digital elevation modeling and remote sensing – mainly MODIS - tools together with a harmonized training-calibration dataset of soil properties. This slightly modified procedure was used to develop a soil database to support the Danube-region data development initiative. The resulting dataset covers the Carpathian-basin and has several layers of occurrence probabilities of WRB diagnostic horizons/features/properties and an additional layer of the reference soil group (RSG) of the WRB system. This paper describes this novel approach for the development of digital soil datasets containing soil classification information. This approach disaggregate the class information for soil properties (WRB diagnostics) and map the occurrence likelihood using digital soil mapping, remote sensing and digital elevation modeling tools.