Geophysical Research Abstracts,
Vol. 10, EGU2008-A-08572, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-08572
EGU General Assembly 2008

Identification of regional scale soil degradation processes by exploiting spatio-temporal features of Kreybig Digital Soil Information System

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Requirements and demands of society for soil information increased significantly in the last decades. Traditional soil survey is time consuming and expensive, new conventional surveys in the near future are very unlike, consequently methods exploiting existing information are becoming increasingly important. In the recent digital era spatial soil information systems (SSISs) are playing a more and more important role in this context. There is much more utilizable information originating from soil surveys, than it was processed published on the map series and in reports, and what is provided by simply archiving them digitally. A true SSIS can and should reach higher levels of digital processing. Integration of an SSIS within appropriate spatial data infrastructure and its updating with efficient field correlation make an inherent refinement and upgrading of the system possible as well as the estimation of the reliability of the system. Field verification/correlation completed with appropriate data collection, and the inclusion of newly accessed data into SSIS can also significantly increase its reliability. This verification should be carried out by the reambulation of the originally mapped areas and the dug profiles accompanied with new samplings at the revisited sites assessing current soil status. On the other hand appropriate management of the SSIS also makes the elaboration of efficient survey and sampling design possible thus making fieldwork quicker and more economic.

In our paper we present GIS-based methods developed for the spatial and thematic refinement, improvement of the Hungarian, national, 1:25.000 scale SSIS. Implication

of new sampling data collected at revisited sites makes the comparison of archived and newly surveyed data possible. Thus changes in soil properties can be identified. This, in one hand, should be recorded in the database updating it. On the other hand, trends can be identified in soil characteristics and functions, degradation processes can be realized and/or forecasted. Joint management and application of multi-temporal spatial soil information within an appropriate relational database management system and GIS environment makes KDSIS a spatio-temporal soil information system.

The work was partly funded by the Hungarian National Scientific Research Foundation (OTKA, Grant No. K60896).