



Requirements for soil information in Hungary – a survey by the GS Soil project

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Introduction

Within the INSPIRE directive the theme soil is explicitly addressed as an individual theme (Annex III) and besides that soil related environmental, agricultural and forestry aspects are also addressed in Annex II and III of the directive.

Within the EU Member States soil data assets exist, however distribution of soil data is difficult and datasets are not interoperable, neither on a technical nor on a semantic level. Soil data therefore are difficult to obtain, to understand and to use.

The project GS Soil (Assessment and strategic development of INSPIRE compliant Geodata-Services for European Soil Data) aims at establishing a European network to improve the access to spatial soil data for public sector, private companies and citizens.

The project addresses issues of data organization, data harmonization as well as semantic and technical interoperability in order to produce seamless geospatial information and to improve the data access for different user groups.

The structural specification for the description and harmonization of spatial soil data within Europe and the operation of a corresponding spatial infrastructure are main objectives of GS Soil. Project partners establish and operate a network of services for spatial datasets and metadata. This network includes distributed services for data transformation, discovery, view and download. The final result of the project will be a central Soil Portal, where European soil data from heterogeneous sources will be bundled. Harmonization of metadata, multilingualism and data interpretation will be considered as well.

Requirements and gap analysis

As one of the objectives of Work package 2 (WP2) a survey was carried out aiming to identify gaps in requirements for soil information.

An online questionnaire was set up and circulated by the WP coordinator and translated into the languages of participating countries. This questionnaire was sent out to professionals and the results were submitted both to the WP leader and to the coordinating national institutions. The current study presents the results of this survey for the Hungarian soil community.

Results and discussion

Altogether 31 questionnaires were filled out, with majority of the users working at public institutions (25) opposed to a very few from the private sector (6).

Table 1. User application of soil data

| For which purpose do you need soil data? | % |
|--|------|
| Assessment of soil quality for agricultural production | 67.7 |
| Assessment of erosion | 61.3 |
| Assessment of landslides | 12.9 |
| Assessment of loss of soil organic matter | 45.2 |
| Assessment of soil compaction | 41.9 |
| Assessment of soil acidity | 35.5 |
| Assessment of soil salinisation | 45.2 |
| Assessment of soil contamination | 51.6 |
| Assessment of soil sealing | 32.3 |
| Assessment of decline in soil biodiversity | 22.6 |
| Applicability of biosolids/wastes on soil | 35.5 |
| Assessment of soil functions | 32.3 |
| Assessment of groundwater recharge | 48.4 |
| Environmental impact assessment | 61.3 |
| Strategic environmental assessment | 25.8 |
| Precision agriculture | 25.8 |

The most common uses of soil data were related to agricultural production, environmental impact assessment, erosion and soil contamination. (see Table 1.)

The majority of the users required primary soil data, while less than one quarter of them were using metadata frequently in their work.

Physical and chemical soil parameters used mostly, with a quite low use of biological parameters.

Most users are interested in searching and downloading data rather than viewing it online.

About 39 % uses combinations of different datasets and their main difficulties are with nomenclature and transformation services, while only a minority feels that there is a lack of metadata.

Main concerns about soil data on the Web are that they are out of date, or missing information about the source/provider. Interestingly there is also a concern about insufficient metadata that suggests that online data might be less documented than databases distributed via other means.

Over three quarters of the users claim that their data requirements are currently not or only partly available on the Web.

Services and metadata catalogues and standardized data formats are the top three improvements Hungarian users would welcome in the future. (Table 2.)

Table 2. Preferred improvements on soil data and information

| Rank | Improvement |
|------|---|
| 1 | Services catalogue |
| 2 | Standardization of data formats |
| 3 | Metadata catalogue |
| 4 | More complex information about laboratory and other data handling methodologies used, such as quality assurance and data management procedures used |
| 5 | Use of standard symbols, units and terminology |
| 6 | Guidelines on how to handle different data units, explanation of special characters meaning |
| 7 | Faster access to data |
| 8 | More complex information concerning owner and authorship of data, email contacts, addresses etc. |
| 9 | Criteria for data evaluation |
| 10 | Thematic glossary |
| 11 | Discussion forum |
| 12 | More secure transactions |

Summary

Based on the results of the gap analysis it can be concluded that there is a great demand of soil data for Hungary. Users mostly require primary data on soil physical and chemical properties for agricultural production, erosion- and environmental impact assessments.

Hungarian users prefer to download their data as opposed to viewing it online, and are more concerned about nomenclature, transformation services and data compatibility than about the availability of metadata. This, however might be due to the very low availability of online soil information. Future developments of online soil information services would probably change user requirements and increase the awareness about metadata.

<http://www.gssoil.eu>
<http://gssoil-portal.eu>

EU-Programme: eContentplus, Best Practice Network
Budget: ca. 5.1 Mio €
Duration: 06/2009 – 05/2012
Partners: 34 out of 18 EU Member States

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