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Assessment of harmonised soil information in Europe

Mark Kibblewhite, Robert J.A. Jones, Mark Stephens, Rainer Baritz, Sigbert Huber, Dominique D. Arrouays, Erika Micheli

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Assessment of harmonised soil information in Europe

- integrated soil research in FP6



ENVASSO – “Environmental Assessment of Soil for Monitoring”

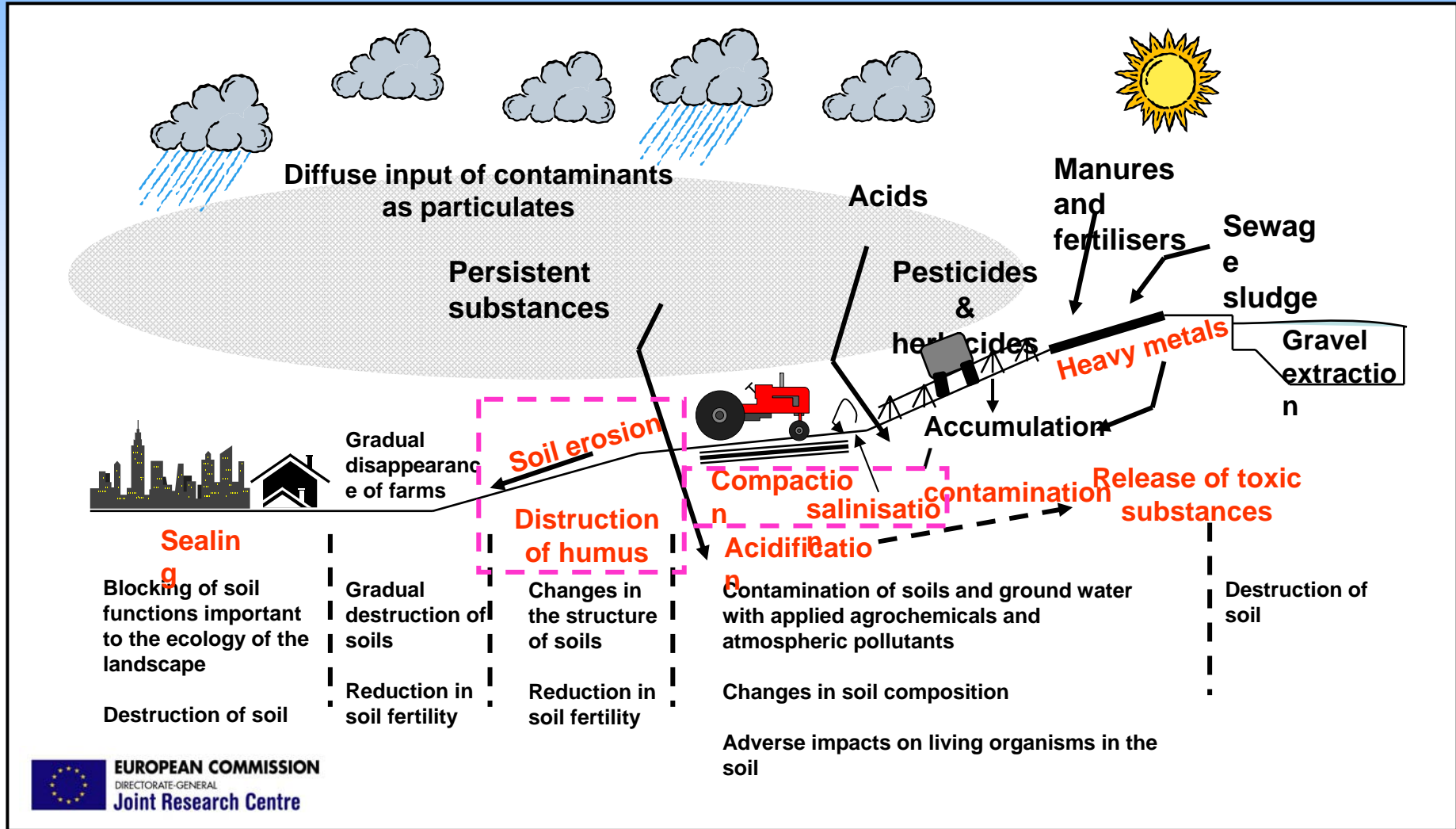
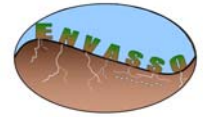
FP6: Jan. 2006 – Dez. 2007

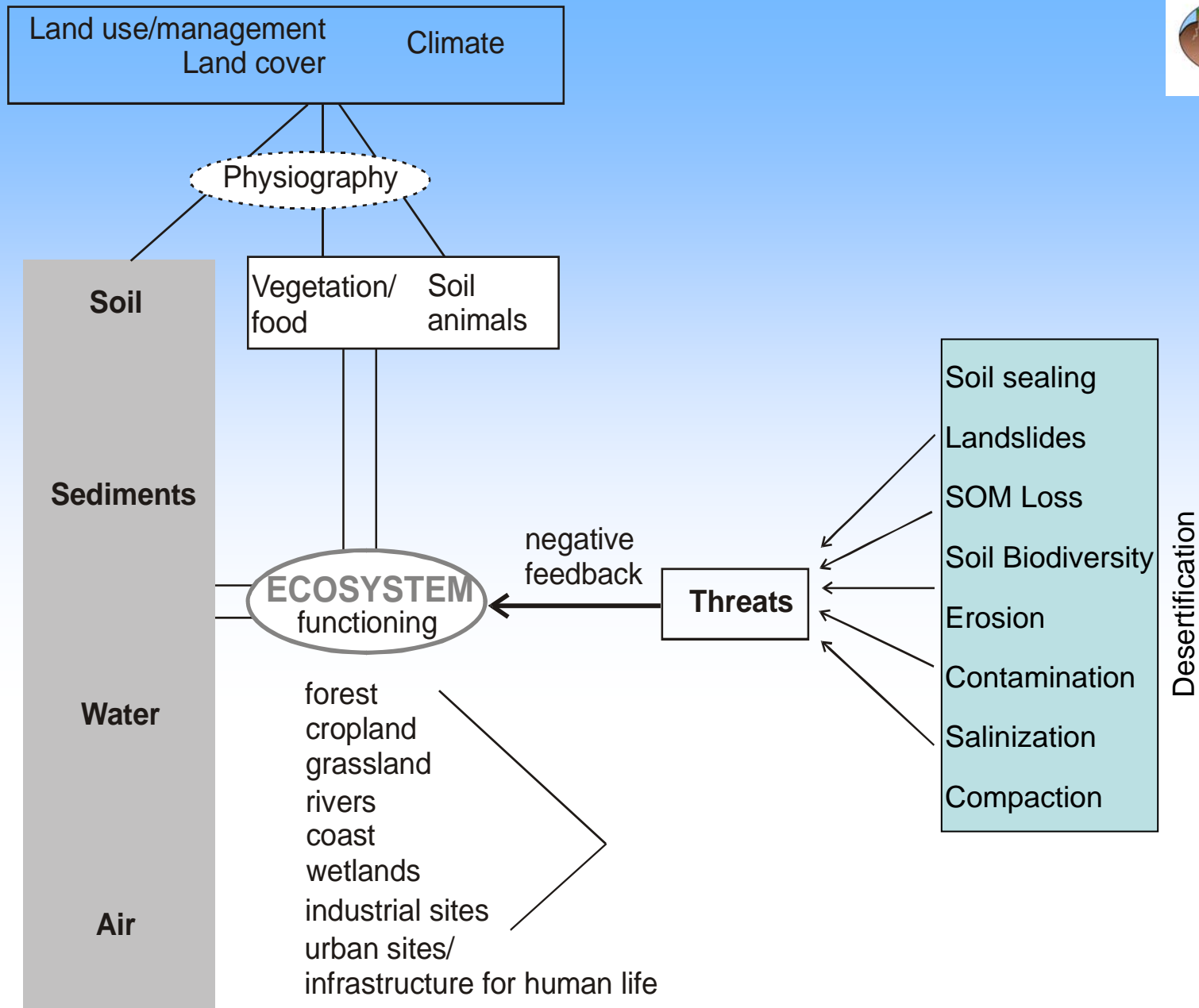
Project core partners:

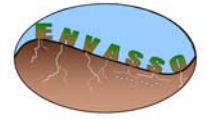
Mark Kibblewhite¹, Robert J.A. Jones¹, Mark Stephens¹, Rainer Baritz², Sigbert Huber³, Dominique Arrouays⁴, Erika Micheli⁵

- 1) National Soil Resources Institute, Cranfield University, UK
- 2) Bundesanstalt für Geowissenschaften und Rohstoffe (BGR), Germany
- 3) Umweltbundesamt, Austria
- 4) Institut National Recherche Agronomique (INRA), France
- 5) Szent Istvan Egyetem (SIU), Hungary

The impact of human activities on soil

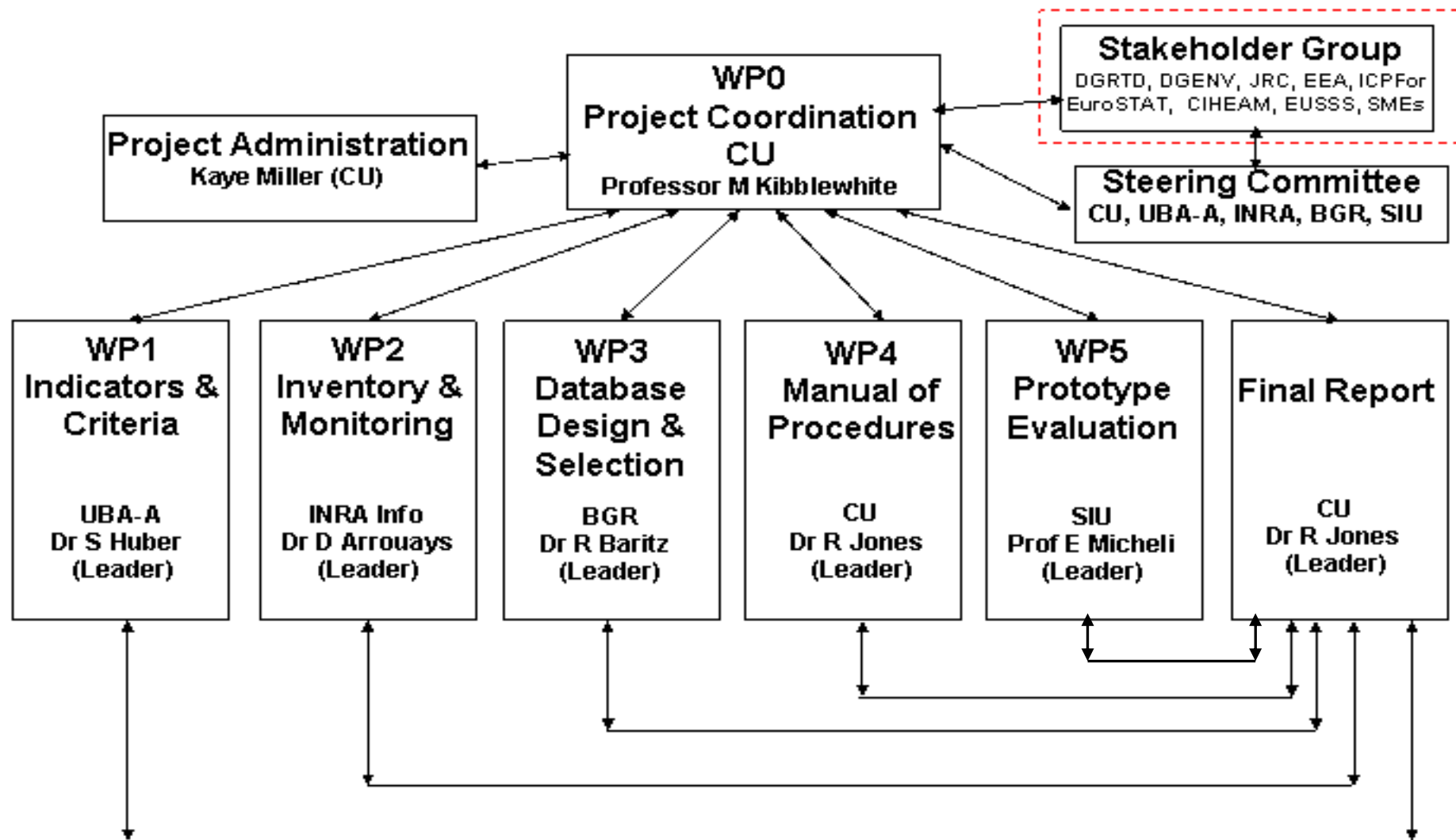






ENVASSO Objectives

- **scientific basis** for **European-wide harmonised characterisation of soils**
- **evaluation of soil status** through **representative measurements of soil indicators**
- development of a **single, integrated, EU-wide and operational set of measurable indicators**



Project Structure and Organisation



WP1: Criteria & Indicators

- Literature review
- **Selection of key issues (n=25) and indicators**
(n=62; priority/TOP3 threats: n=26) related to soil threats
- **Baselines and Thresholds**
- **Data and user requirements**

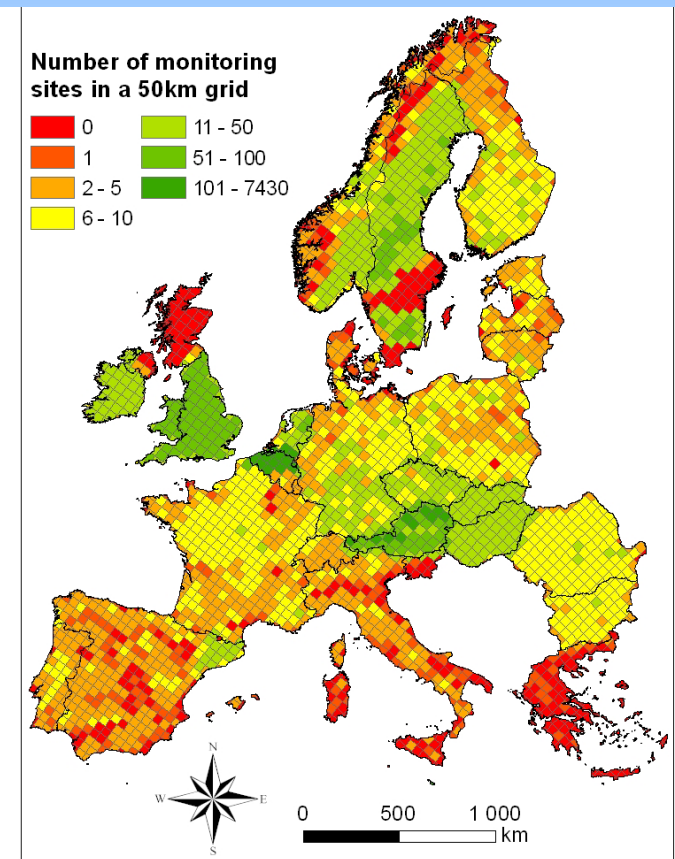


Fact sheets
for priority indicators

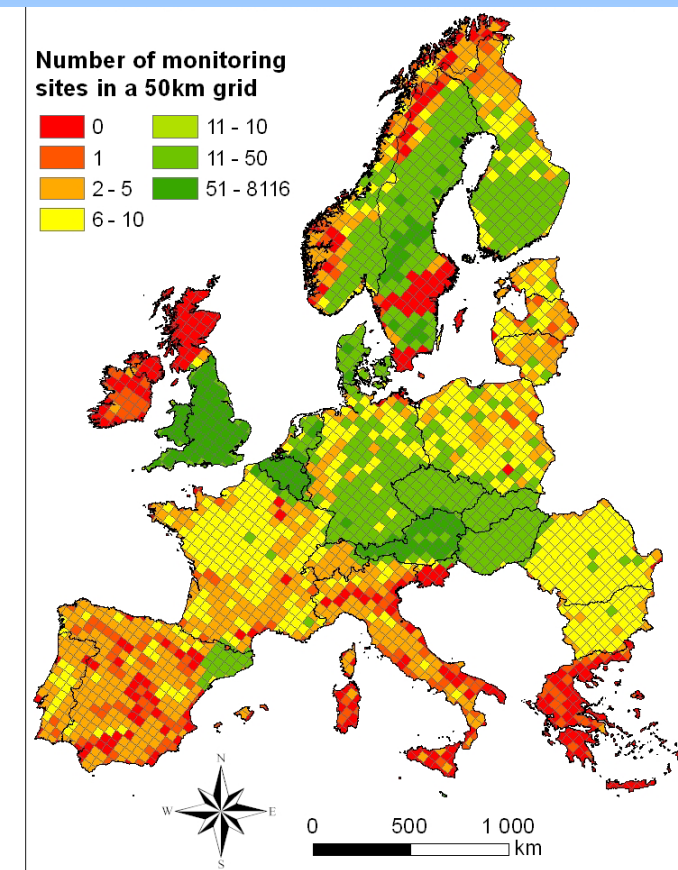
WP2: Sites designated for investigating soil threats



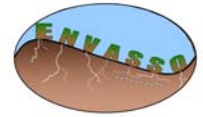
Lead content



Organic carbon content C

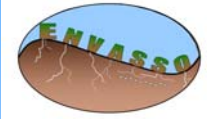


WP3: Data Base Design and Selection



Structural analysis of existing soil data bases/ information systems

- **data/system holders vary: universities, research facilities, national and regional agencies**
- **several data bases exist, which do not share common standards, and which are not linked**
- **where information systems exist: different objectives, structures, data types and nomenclatures are used**



WP3: Data Base Design and Selection

Data communication: XML-based soil information exchange

Guidelines for soil descriptors - World Reference Base - WRB

Registration, location

| profile number | | description status | date of description yymmdd | author | location - pointer to permanent feature | | | elevation [m] | map Sheet number |
|-------------------------------------|---------------------|--------------------|-------------------------------|--------|---|--------------|-----------|---------------|------------------|
| location letter code (admin. units) | profile number code | | | | object | distance [m] | direction | | |
| | | | | | | | | | |

atmospheric climate and weater conditions

| climate | | | | weather conditions | | | soil moisture |
|-------------------------------|--------------------------------|------------------------------|---------------|-------------------------|--------------|--|---------------|
| monthly mean temperature [°C] | monthly mean precipitation[mm] | length of growing period [d] | present cond. | present air temperature | former cond. | | |
| | | | | | | | |

rock outcrops

| surface cover | | distance | coarse surface fragments | | erosion | |
|---------------|----------|---------------|--------------------------|------------------------|---------------|--------|
| surface cover | distance | surface cover | fragment size | category | area affected | degree |
| none 0 [%] | none | none 0 [%] | none | no evidence of erosion | 0 [%] | none |

horizon boundary

| nr | topdepth | | distinctness | topography | horizon designation | fine earth texture | clay content [%] | ab |
|----|-------------------|----------------------------|-----------------|-----------------------------|---------------------|--------------------|------------------|------------|
| | from surface [cm] | botdepth from surface [cm] | | | | | | |
| | | | abrupt 0-2 [cm] | smooth-nearly plane surface | | send (unspecified) | | none 0 [%] |

Horizont hinzufügen
 Selektierten Horizont löschen
 Selektierten Horizont anzeigen
 Selektierten Horizont ersetzen

Genetic and systematic interpretation (classification)

humus form

none

```

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Participation in ISO/TC/SC 1/WG3 "Data codification and management"

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WP3: Data Base Design and Selection



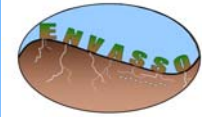
Project soil data portal as the platform for a prototype web soil service (WSS)

Following OGC-standards, and rules set by INSPIRE

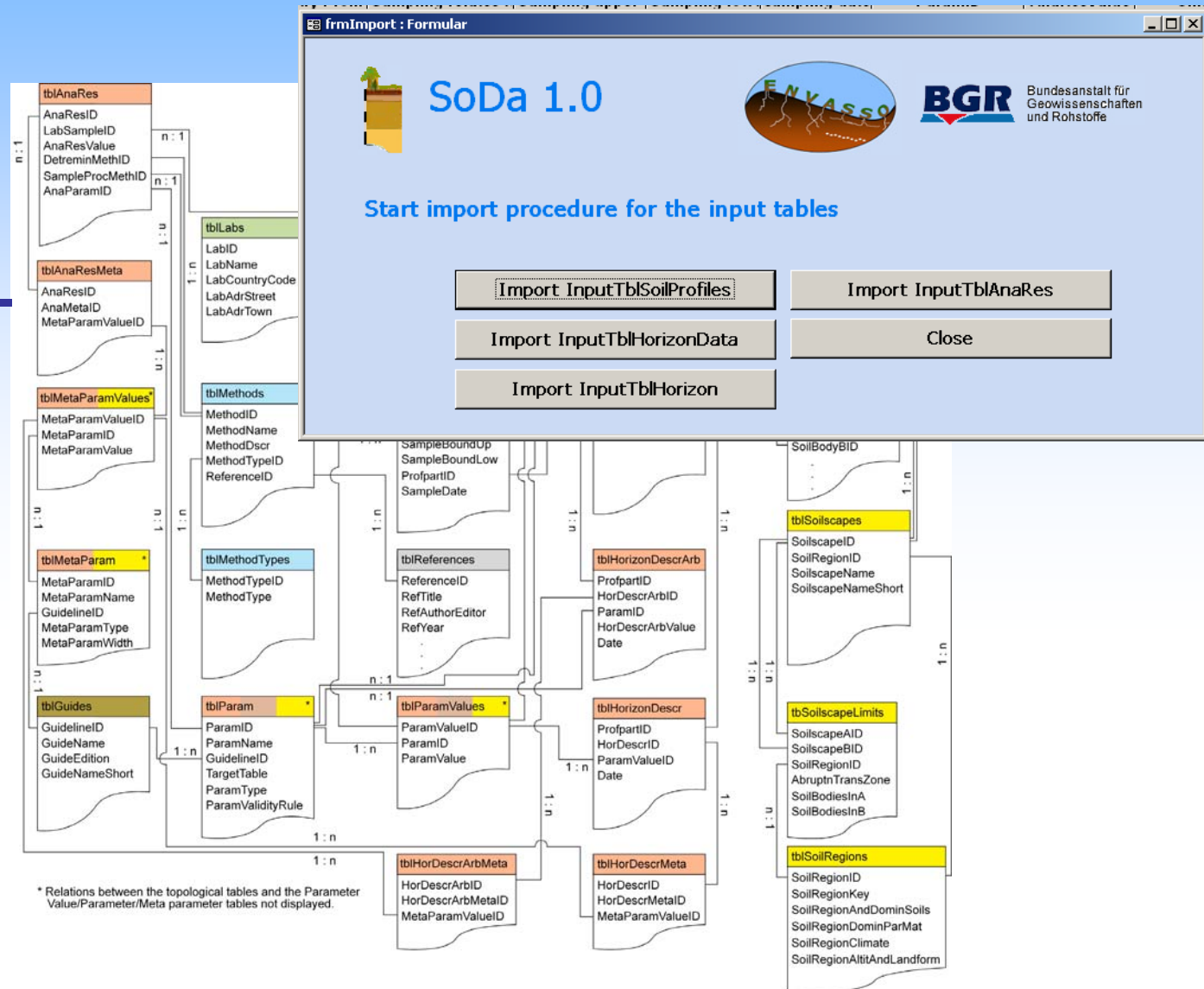
The screenshot shows a web browser window displaying a map application. On the left is a legend with two main sections: 'Kartengrundlagen' and 'Climatic_Maps'. The 'Climatic_Maps' section contains 27 numbered items with corresponding color swatches. On the right, there is a 'Project ENVASSO' metadata table. Below the table is a map of Europe with a scale bar and a 'Loading Map - Please Wait' message.

| Subject | Theme | Specification | Viewport |
|---------------|---------------|--|--------------------------|
| Soil Science | Climatic maps | Climatic Regions of Europe 1 : 5,000,000 | Climatic Areas of Europe |
| Meteorology | | | |
| Geomorphology | | | |

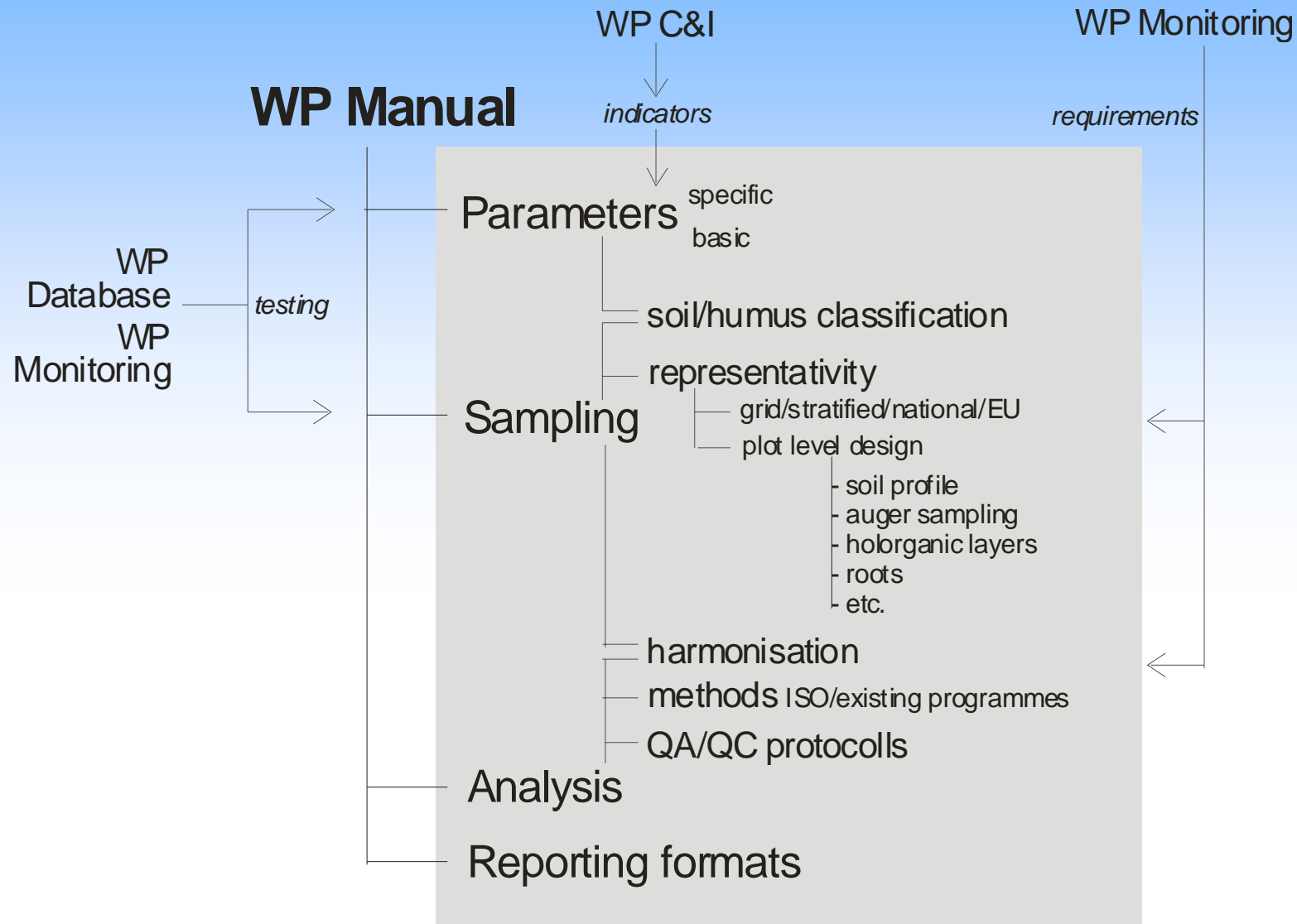
WP3: Data Base Design and Selection



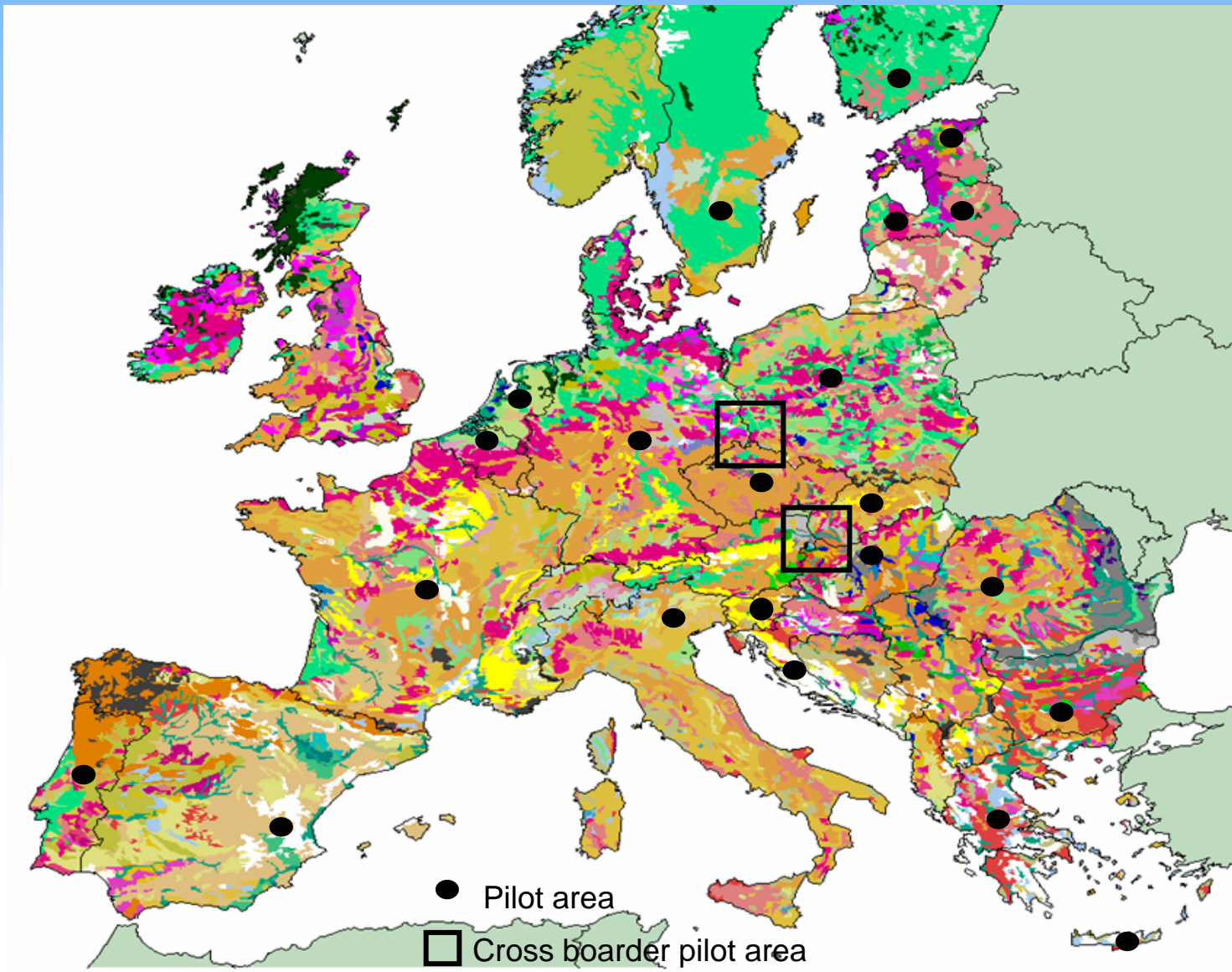
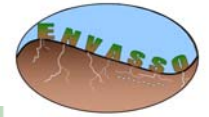
Development and testing of a data model for soil monitoring data



WP4: Manual development



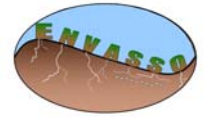
WP5: Pilot areas



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Outlook for developing soil observing systems

from the 'data base design' point-of-view:



- **data assembling units:** systems for soil monitoring networks at various measurement intensities and auxiliary data uptake
- **standards development:** classifications, data formats, (online) data communication
- **data storage and QA/QC units:** harmonization, data documentation and access
- **data processing units:** method development: pedotransfer functions, models, up-/downscaling, dynamic linkage of semantic and geometric typological soil data